THE BUILDER

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THE BUILDER

A RECORD OF ARCHITECTURE AND CONSTRUCTION.

WITH WHICH IS INCORPORATED THE "BRITISH ARCHITECT."

VOL. CXVI.—No. 3985. JUNE 20, 1919.

BRICKS AND CONCRETE.

PERHAPS the outstanding feature of the immediate controversies raging around the housing problem is the most suitable walling material for the cottages, which we hope soon to see growing over the land with mushroom-like rapidity. Impatience is natural, and the general feeling that it is all talking and not much doing can be readily understood. The attitude of an acquaintance of the dominant sex, who, on perusing her architect's account for fees, exclaimed, "Why, he was only down here half-a-dozen times for an hour or so," represents, in a large measure, the public mind, which never realises that more than half the work is done before the first sod is turned. And, as with a private commission, so with a great national scheme, save that the processes behind the scenes are even more lengthy. Once, however, a fair start is made, we may expect visible progress on the basis of a geometrical and not an arithmetical progression. This impatience is manifesting itself in suggestions for the use of materials whereby construction can be accomplished more quickly, and possibly more cheaply, and any practical suggestions to this end are to be welcomed. The Press has contained many letters—some of them not very temperate—on the habit of using bricks for cottages and the claims of concrete are very strongly urged. We hold no brief for either and think that, as usual, reason in this matter is to be found in the golden mean. The use of local materials to the fullest extent is certainly to be strongly advocated, for the saving in transit alone which must result will have a marked effect on the rapidity and cost of construction, provided that such materials are really suitable for their purpose. Architects and builders are accused of conservatism and told that they are archaic in specifying and employing bricks, especially at the present time when labour and kiln output present difficulties. In the very interesting evidence given some years ago before the committee appointed to consider the cost of school buildings, the statements of more than one witness indicated that there was little to choose between brick and concrete in the matter of cost, but this need not be true with the present price of brickwork. As to labour, we infer from the correspondence referred to that the concrete worker and erector is a more economical person to employ than the present-day bricklayer; and, if this is generally true, given access to local aggregates, concrete building should certainly be cheaper. Brick in artistic hands has, we hold, a possibility of charm hardly enjoyed by concrete or rough-cast, and is, moreover, understood the world over by the local workmen, but where a large number of cottages are in contempl tion the cost of tuition and supervision in the use of concrete should be a very trifling matter. We cannot, however, agree that any labourer can be trusted to work satisfactorily in concrete without supervision, or that all the materials put forward will necessarily form suitable aggregates. The case often urged against concrete is its coldness, both physically and artistically and its tendency to produce condensation. These criticisms refer chiefly to solid concrete walls, which have comparatively few advocates. Undoubtedly, the system most favoured is hollow wall construction. Short of a vacuum, there is no better non-conductor than dry air, hence cavity walls are highly efficient as a protection from cold in winter and also heat in summer. As to aggregates, gravel or broken stone have no objections, but though clinkers, so strongly advocated as a cheap and widely produced waste product, gives a most excellent key, a word of warning is necessary respecting all coal residues. We wish every success to the use of these bodies and our remarks are not intended as a deterrent, but merely to invite thorough investigation.

All coal contains sulphur, which, in the case of breeze, is by no means entirely expelled by the combustion suffered; and while destructor clinker is much less likely to contain appreciable amounts in the presence of alkaline bodies, such as lime refuse, sulphides of lime might possibly be formed. These compounds, of which there are several, are the chief cause of the trouble which has been known to occur in breeze and pan-ash construction, for, in the presence of moisture, they decompose, yielding finally slaked lime—a process which results in considerable expansion. These sulphides of lime occur in considerable quantities in basic blast furnace slag, a waste product which will probably be advocated presently by the concrete enthusiasts for cottage building in our iron-founding districts. When slabs are made of suspected materials of this kind, it is, at leas', desirable to insist that they lie in the open for a winter before use, during which time their weathering qualities will have an opportunity of being tested.

In proof of our desire to show a liberal spirit towards the concrete advocates, we make two suggestions which may further the use of this material. There may be certain districts where no natural aggregate occurs and where old brickfields exist which are out of commission and not likely to be available for some time to come, and we hear of such cases locally. In such circumstances clay may be burnt in clumps (much as charcoal is burnt) mixed with a little coal and covered over so that combustion is gradual. The burnt clay could then be used broken up as "brick" aggregate for block-making. Again, Portland cement is at present very expensive, and certain poor hydraulic limes, which would be useless for concrete making as they are produced, can be greatly strengthened by the addition of about 5 per cent. of sulphate of lime (gypsum) distributed through the material. This selenitising process, well known for plasters, has not, in our opinion, received sufficient attention from the standpoint of mortar-making.

These are national matters which deserve investigation of a public kind. Certain experiments are in hand, for example, the "Country Life" cottages, all built of different materials; but we want others—fundamental experiments to elucidate the science of these matters. We have a Department of Scientific Industrial Research, which has at its disposal very large Treasury funds. Are these not subjects which it should take up at the present time? Concrete failures have occurred and the selection of materials in this vast scheme imposes great responsibilities on architects and others who surely have the right to expect the highest scientific assistance to expedite their choice. This is the best way to convince conservatism to embrace liberality. It would not be difficult to submit immediately samples of local aggregates, about which doubt existed, to a scientist appointed by the Research Department, who would, at least, be able to report immediately if there were no objections to their use, and in many cases to make an adequate investigation before the housing scheme involved had reached the building stage.

NOTES.

The Cost of Building.

THE statements made by "A.R.I.B.A." in the letter which we print on another page have been made with such frequency of late that they must, we are afraid, be accepted as facts, much as we regret such a conclusion, and we agree with our correspondent that the outlook is serious. It is not easy to say how the conditions are to be altered for the better, but that they will be sooner or later we are convinced, as otherwise the business of the country cannot be carried on, and that is unthinkable in the case of a practical people who have overcome great dangers in the past, even though this has been done by "muddling through." It is to be hoped, for instance, that the disclosures of Sir Adam Nimmo before the Coal Commission *i.e.*, the advice of a miners' leader advising the men to restrict their output with the object of fighting the employers, may be understood in reference to the general community and the welfare of the country at large. Labour in America appears to have come to a satisfactory understanding with Capital, and one wonders why the same result cannot be the outcome here.

Design in Housing.

SIR ASTON WEBB, P.R.A., writes to the *Times* of Tuesday in reference to correspondence in the columns of that journal on the nature of the materials, arrangements, and construction of the 300,000 new houses proposed to be immediately erected. As he very truly says, the question of their appearance, when erected, seems to pass unnoticed, and this, of course, is a matter of more importance than some writers in the daily Press appear to realise. "My correspondence," says Sir Aston, "tells me that there is a very natural anxiety in the country on this point, and I am frequently asked what steps the Local Government Board are taking to ensure that these new houses come up at least to some moderate standard of design. I am, of course, unable to answer the question, but perhaps the Department would be good enough to do so. There is plenty of unemployed talent available, but rumour says it is but scantily used. If this is so I fear, while we are building in haste, we may have to repent at leisure. The amenities of the whole countryside are involved in the question and its answer." We think it will be agreed that this inquiry is very much to the point, and we shall watch with some interest for an official reply. While some excellent schemes have been prepared and are to be carried out, there are others which cannot be said to come up "to some moderate standard of design."

The Architects' and Surveyors' Assistants' Union.

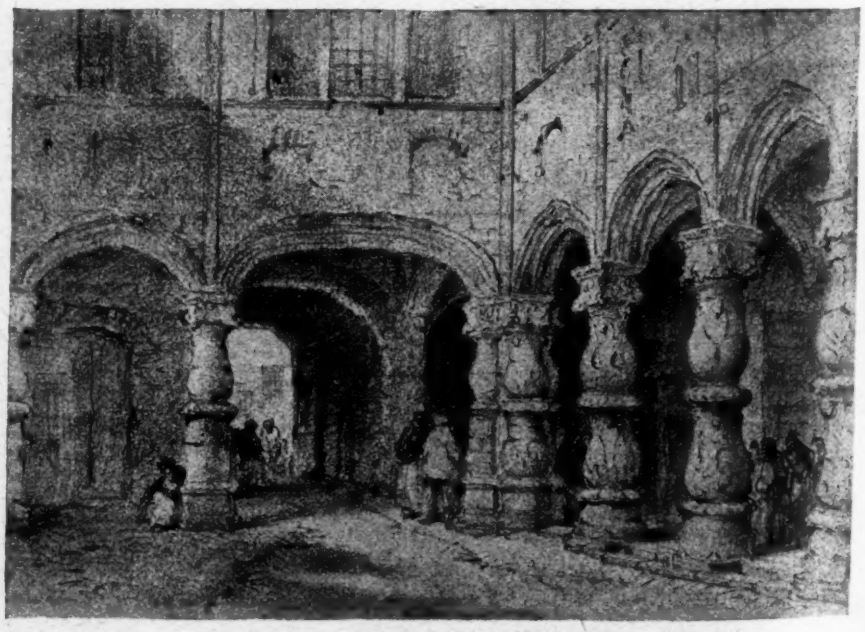
THE attitude of the Architectural Association towards this newly-formed society, and the practical help given by that body, should go a long way to ensure the success of the Union, though even without the help of such a virile body as the A.A. the reasonable objects of the Union deserve the support and help of all those who believe that only from adequately-paid and contented assistants can the best work be expected. Most architects and surveyors realise this, and provided as Mr. Maurice Webb very truly remarked at the meeting which we report on p. 609, the union is properly run, as it appears to be, it will be looked upon in due course as an asset to the profession. We wish the Union every success. Like other useful societies we could name, it is the outcome of correspondence in our pages, and we are glad it has been started under promising auspices.

Forms of Building Contract.

Now, if ever, the form and administration of building contracts are a matter of urgent concern to the architect and builder, and it would certainly appear from Captain Rimmer's paper to the Institute, recently reported in our columns, that unless architects deal with the contracts in a clear and business-like manner they are liable to grave trouble. The many difficulties which have to be encountered in dealing fairly between the building owner and the contractor, especially in large and complicated works with various sub-contracts of a highly technical kind, cannot be considered amongst the attractions of his profession to the architect who is concerned in the artistic form of his work—the two things so seldom go together—but errors as to the latter are readily forgiven (or never discovered!), whilst errors in the former are seldom forgiven and never forgotten. Captain Rimmer's paper and its discussion make it clear that the judicial mind and extreme care and accuracy in dealing with the details, variations, and progress of a contract are of the utmost importance to the architect.

Public Buildings and their Sites.

THE question of a site for the new London University building has again been brought to the front by a question being asked in the County Council. This matter of sites for large buildings, especially those of a public kind, is one of the most important things to be considered by the governing authorities of a great city. No one with a spark of imagination as to the building up of great cities can have failed to visualise the possible effect on the riverside aspect of the Thames had many of the fine available sites been utilised for buildings which have found a home elsewhere. If the projected great Opera House had been erected on the proposed site near the Westminster end of the Embankment; if the County Council buildings had been placed somewhere about the proposed site, near Whitehall-avenue, of the new Board of Trade offices; if the Law Courts had found a suitable site somewhere between Charing Cross and Blackfriars, the whole result on the grandeur of London as an Empire city would have beeen very fine indeed, and we doubt if anyone could have overestimated the value. We were not surprised that a certain well-known architect intended to try to realise something of this on paper, and we regret his public-spirited idea did not materialise, as it would have done something to awaken the imagination of London citizens to the great oppor-



Le Palais de Justice, Liége, Belgium.
From a Drawing by the late L. J. WOOD, R.I.

tunities they have already missed and will certainly miss in the future unless some finer sense of opportunities is allowed to influence the action of our authorities. It is at least something to have it on record from a resolution of the London County Council that a site for the University on the south side of the Thames "would form an important feature in the beautifying of London."

Model Dwellings.

NOTWITHSTANDING all that will be done by better transport and housing to remove the poorer population into better air, we must anticipate that large numbers will find it necessary, and a large number will even prefer, to live in overcrowded towns. For these a better type of flat is needed, and we hope the Bethnal Green authorities, whose Committee has decided in favour of housing in blocks on the Brady-street area, though "they do not admit of insistence upon ideals," will find some way to gain some substantial amelioration of ordinary so-called model dwellings in their new scheme. Here is a case where a competition might possibly have a good result. Half-a-dozen premiums of £50 each to invited competitors should produce a design with the maximum amount of light and air and general amenity; it might even bring forth a bit of good architectural composition, without narrow windows, deep reveals and dull materials.

Stratford-on-Avon.

IT has often been claimed that our towns and cities are controlled with far less wisdom than is shown in the conduct of any successful shopkeeper. It is perfectly true that the mere business aspect of a town's life is not the only thing which counts, but it does count to so great a degree that it is amazing to find how often it appears to be either badly considered or not considered at all. Sometimes sentiment and business appear to come to opposition, and perhaps at first sight this seems to be the case at Stratford-on-Avon, where the associations with our immortal poet come apparently into conflict with the business progress of the town. It is argued that the two hundred-and-fifty thousand annual visitors which Stratford-on-Avon attracts because of its sentimental associations and natural beauties form a strong business asset against any other possible business advantages which the creation of new factories would supply. It may be that the Stratford-on-Avon authorities will be governed in the last resort by purely business considerations, and it is not pleasant to think of this as a possibility, but we have always felt that few towns or individuals in this country have any real belief in the actual business value of art. Until this can be generally recognised we shall always be confronted with such difficulties as now present themselves at Stratford-on-Avon.

A Picturesque Austrian Pavilion.

Photographic Survey of London.

BEARING on the development of London comes the announcement of the chairman of the Camera Club that "should sufficient support be forthcoming it hopes to carry out a photographic survey of London during the present year." Is not this a case for collaboration with the London Society, so that such fine overhead photographs of London, Edinburgh, Cromer, &c., as we have published in the *Builder* by the courtesy of the Air Ministry might be produced in such a way as to help largely in the realisation of London improvement problems?

Obligations of Committee.

IT is the idea, we believe, that certain names on committees are useful; at all events, it ought to be a fact, else the number of non-attendances against members of committees would be very discouraging. The Art Committee of the R.I.B.A. met only three times last session, and yet eleven members failed to put in a single attendance. Seven members attended, and of these only two attended three times. One wonders what continuity of useful work can be expected from such a record. Of the Literature Committee there are nine members recorded for no attendance at all, out of six meetings, and only two members attended every time! Would such lack of interest be tolerated on the Council?

The Retiring President, R.I.B.A.

WE have already extended a welcome to the incoming President of the R.I.B.A., but we must not forget that the profession is indebted to Mr. Hare, the retiring President, for the way in which he has fulfilled the duties of President of the Institute during the difficult period of his office. No one who has occupied the chair has shown more active and alert regard for the well-being of the profession, and we feel sure that he carries with him in his retirement from the chair many kind thoughts from those whom he has so well served. One would be more than human to have fulfilled every desire and expectation, or to have satisfied everyone during the crisis the country has gone through.

GENERAL NEWS.

R.I.B.A. Gold Medal.

The presentation of the Royal Gold Medal for the promotion of Architecture, to Mr. Leonard Stokes, F.R.I.B.A., will take place at the Institute, 9, Conduit Street, W.1., on Monday, June 23, at 8 p.m.

Royal Sanitary Institute.

The following three candidates have been awarded certificates for sanitary science as applied to building and public works:—H. L. Cappleman, Manchester; H. P. Sadler, Widnes; and H. R. Stansfield, Cleveley.

New Cinema for Glasgow.

The site at the corner of Sauchiehall Street and Renfield Street, Glasgow, which is regarded as the most important position in Glasgow, has, states the *Daily Telegraph*, been sold to the Provincial Cinematograph Theatres, Ltd., who propose to erect a cinema theatre on the site, at a cost of about £200,000.

Supply of Bricks.

It was recently announced in Peterborough that the yards of the United Brick Co., at Norman Cross and Whittlesey, and the Northam Brickworks, at Eye Green, had been purchased by a syndicate, which would then control the output of between 50 and 60 million bricks per annum.

Memorial.

A stained glass window, representing the Transfiguration, has been placed in Christ Church, Ealing, to the memory of Mr. Robert Willey, F.R.I.B.A., an ex-Mayor and Alderman of the borough.

Battle Memorials.

A special commission, appointed by the French Government, has selected a number of sites on the Western front which are to be preserved in their present state. About 140 sites have been selected, including famous battlegrounds, deep dug-outs, underground galleries, ruins, pill-boxes, &c., and several of the forts at Verdun.

The Imperial War Museum.

The Committee of the Imperial War Museum, which is to be opened at Sydenham in May next year, is collecting and storing the material. Practically the whole of the Great Nave of the Palace will be occupied by the Museum, and a section will be devoted to relief models of the battlefields, many of which are to be executed by eminent sculptors and painters.

Scientific Societies' Congress.

In conjunction with the London and Middlesex Archaeological Society, members of the congress of the South-Eastern Union of Scientific Societies last week set out for an archaeological ramble in the City of London, visiting, among other places, the Guildhall, St. Mary-the-Virgin, Aldermanbury, Brewers' Hall, and Bishopsgate Institute. Mr. Chas. Hopwood, F.S.A., and Mr. R. W. Crowther, F.R.G.S., acted as guides.

Personal.

BIRTHDAY HONOUR.—The award of the M.B.E. has been conferred on Mr. Fergus C. Rogers, of Kimberley, who is a member of the South African branch of the Society of Architects.

MUNICIPAL OFFICIALS.—The Sheffield Corporation Finance Committee has recommended that the salary of Mr. F. E. P. Edwards, the city architect, be increased from £750 to £900 per annum, as from Jan. 1 last, with a further increase of £100 on Jan. 1, 1920. It was also recommended that the salary of Mr. W. J. Hadfield, the city surveyor, be increased to £1,500 per annum.

German Competition.

The *Times* learns that a large contract for constructional engineering in Holland has just been accepted by a German firm on terms much below those of a British tender. The business, which amounts in the aggregate to a very large sum, has been accepted by the German firm at about £20 per ton less than the figure tendered by a leading British company. The price quoted in the German tender for the fabricated constructional work to be supplied is actually below the price quoted for the raw material as delivered by the rolling mills in this country. Costs of transport, therefore, do not account for the discrepancy. The willingness of the German house to undertake work on such conditions indicates the nature of the industrial competition which is now to be expected.

The Temple Fountain.

The Temple fountain has recently been restored to its old simplicity, by the removal of modern and ornate additions. According to the *Times*, when the Library was built in 1861 "the beautiful, quiet, unpretending little squirt of a fountain" was replaced by what Lord Coleridge's father called a "New Road composition of the vulgarest order," which included Cupids supporting a three-decker arrangement. That was removed after a time, and again for a while there was a simple squirt, though somewhat more noisy than its predecessor. In 1878–9, when Garden Court was built, three more basins were erected, but on this occasion the support was derived from cranes, whose necks were broken in course of time, and by degrees the upper portion was removed so as to leave the basin as it was until a few days ago.

Catalogues for Abroad.

H.M. Representative at Prague is desirous of obtaining catalogues of British export firms who are anxious to open up trade with Czecho-Slovakia. These catalogues should be printed, if possible, in the Czech language, or in French or German, and should be sent direct to H.M. Chargé d'Affaires, British Legation, Prague.

Arrangements have been made for the distribution of British catalogues in the interior towns of Turkey. Catalogues should be addressed to Mr. A. Waugh, British High Commissioner, Constantinople. It is advisable for firms wishing to take advantage of this offer to furnish the names of agents in Constantinople, to whom inquiries from the interior may be passed.—*Board of Trade Journal.*

Chantrey Bequest Purchases.

The following works have been purchased by the President and Council of the Royal Academy under the terms of the Chantrey Bequest during the first part of the present year:—

PAINTINGS.

"Claudio and Isabella," by William Holman Hunt.

"The Temple of Love," "The Passing of Venus," "King Cophetua and the Beggar Maid" (early version), "The Magic Circle" (water-colour) "The Story of Perseus" (10 designs in water-colour), by Sir Edward Burne-Jones, Bart.

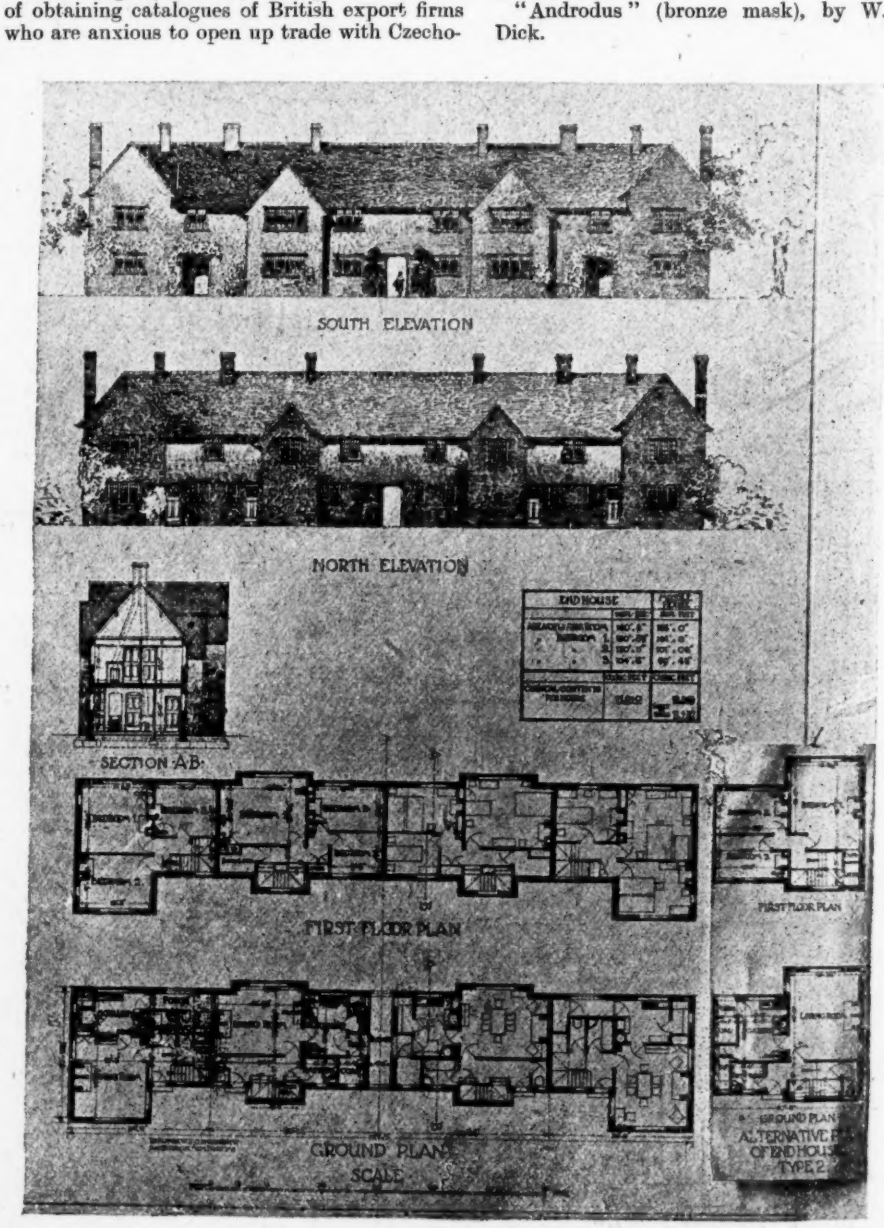
"The Line of the Plough," by Arnesby Brown, R.A.

"The Beverley Arms Kitchen," by Frederick W. Elwell.

SCULPTURE.

"Psyche" (bronze statue), by F. Derwent Wood, A.R.A.

"Androdus" (bronze mask), by W. Reid Dick.



Bristol Housing Competition: Type No. 2.
Premiated Design, by Mr. S. S. REAY, F.R.I.B.A.

CORRESPONDENCE.

Cost of Building.

SIR,—Much twaddle is written and talked by simple souls who know nothing about the matter, or by others who must know but desire to conceal the facts. The facts are serious—inflated wages, restricted output and "controls," both Government and trade unions, that are crippling industry and freedom of action, have made building and repairs almost prohibitive. For some years past public jobs have been schools of idleness. This is almost common knowledge, but let me give some instances told by men I know.

A good honest carpenter gave up country work and went to hut building. He, with double his former wages, said: "I could do as much in a day as I'm allowed to do in a week."

A bricklayer was engaged in building an aerodrome in the Midlands. He began to do a fair day's work, but the foreman came along, and noticing his corner several courses higher than the others, said: "This won't do; you must keep stroke." He soon found the "stroke" was to lay only *sixty bricks a day*. The labourers, lusty, exempted Irishmen, had scrapped the hods and brought up one or two bricks in their hands. A few days later a Government hustler lecturer (with a big salary and a railway pass) came along; the men were called up to listen to a half-hour's lecture on what our troops are doing, &c., finishing up, "they are patriots like you, doing all you can for your country. Now, if you could only lay six more bricks a day it would help to win the war"! My informant said he heard this precious lecture twice.

Another bricklayer, an Australian (who, after the Armistice, worked for me), said: "I heard the Old Country needed help so I came over and got a job in East Kent, building a large store with concrete slabs. I was not afraid of work and thought war jobs were urgent, but before the first day was over I was stopped and told pretty plainly that steady work was not allowed. Next morning a labourer put *six slabs* on the scaffold by me and said, 'that's your lot for the day,' so I began to see what a fraud the whole thing was."

[We are giving a few typical examples of interesting old doorways in this and succeeding issues.—ED.]

Do not shirk facts. The outlook is serious. Fabulous cost of labour and materials and uncontrolled waste, "more money" and organised idleness are heading to a crisis that will not be avoided by "controls," "nationalisation," or Government "concessions" to every grumble and threat.

A.R.I.B.A.

Architect or Clerk of Works?

SIR,—I have been much interested in reading the varied articles and letters, &c., in your paper on the new housing schemes, and your remarks in last week's issue on the advertisement of the Warwickshire Small Holdings Committee has prompted me to write you. Although capable of carrying out the duties they ask, and which as you rightly say are essentially an architect's duties, I should be sorry to take it on at £300.

Cannot something be done to enlighten these committees on the duties of an architect and a clerk of works? All they seem out for is the sweating of both parties and getting as much work done as possible on the cheap. No consideration is given to years of training and practical experience. Why is this a special failing with all public bodies, and Government appointments? One would think that, as elected members by their district, they would have some sort of sympathy for those asked to act for them in a responsible position, but in the majority of cases they seem to have no thought but to cut one down to bare existence figures. On my last job (a Government one) the pay was totally inadequate and the duties required were those of a surveyor as well as clerk of works (weekly reports and cost of work to date). The timber, being supplied by Government, had to be checked by me and carefully supervised to prevent waste; and now and again I was asked to give an estimate of work to complete, which figures were duly checked and compared with their own estimate of cost. I was able to carry out these duties to my architect's satisfaction, who, fortunately for me, was a thoroughly practical man.

Why is there this meanness in all public appointments? We get far better treatment from architects in private practice. A foreman carpenter with little responsibility, gets now, under the new rates, his 5 guineas a week, whilst we are asked to perform duties and have far greater responsibilities at a less rate.

We clerks of works would esteem it a gracious act on your part if you would take up the cudgels on our behalf.

P.P. INCORPORATED CLERKS OF WORKS' ASSOCIATION.

[*** This is a matter which no doubt the Clerks of Works' Association is considering. War conditions, the reduced purchasing power of the sovereign, and the substantial wage advances to organised labour have profoundly affected the position and well-being of the professional classes, and it was never more important that the societies representing these classes should do everything possible to protect the interests of their members.—ED.]

Black Varnish on Concrete Roofs.

SIR.—In the article "Economical Houses" in last week's *Builder*, I see it suggested that black varnish could be applied to pitched concrete roofs. The question of waterproofing concrete both for roofs and walls, is important in view of the advantages which concrete offers as a primary constructive material. In a series of tests conducted by myself during the last few years I found that several of the bituminous paints now being extensively advertised are quite ineffective for waterproofing cement or concrete when the surfaces to which they are applied are of flat pitch. The reason for this is largely due to what may be called "back action." Moisture which found its way into the concrete during wet periods, later on, when warmed by the sun, forced a way out by a different route, a process which ultimately completely destroyed the bituminous paint. I found the same thing occurred when ordinary paint was applied to damp plaster; the paint being destroyed in a surprisingly short time by the returning moisture.

Some of the makers of bituminous paints recommend their use for waterproofing brickwork, as a coat applied behind the inside plaster. I have seen photographs of a test demonstrating this. I should like to see the same brickwork waterproofed in this manner, after say, twelve months. Bituminous paint applied on the inside of a damp wall, I found, gave much the same result as ordinary paint. Perhaps some of your readers have had experience with these materials.

MAURICE S. R. ADAMS.

Charity Rents.

SIR,—I read in my daily paper that Major Astor says "the Government want to do away with charity rents." I rub my eyes and look again. But yes! it is so stated. What can it mean? Is not the Government proposing to rebuild England at the expense of everybody except the so-called working classes? If wages are doubled, are rents likewise doubled? No, we have charity rents already, and we are going to have them as a State institution.

A PUZZLED RATEPAYER.

Good Work Certificates.

SIR,—In your last issue you refer to a suggestion I made in the R.I.B.A. Journal three or four months ago, or rather to Mr. Kerner-Greenwood's comments on it. The point arose out of Mr. Baillie Scott's paper in which he complained of the poor standard of work in the building trades. Up and down the country there are many hundreds of men who take a real and intelligent delight in their work, but we must admit that on the whole Mr. Baillie Scott was right. One of many reasons for inferior work is the bad system of examinations held under the Board of Education. The majority of the technical schools are largely dependent on the grants they earn, and so it happens that our future tradesmen are taught Building Construction according to South Kensington. It is time we swept away this rubbish and put the construction of building in its place. I think we architects are very much to blame, and I appealed to the R.I.B.A. to found an association for workers in the building crafts, the candidates to be nominated by a number of architects under whom they had worked. I think the big majority of the men would be with us in any efforts to bring their work out of the mechanical and depressing grooves of to-day, and I even hope the R.I.B.A. may be induced to help in the education of the men who have such power to make or mar an architect's design.

S. B. CAULFIELD.

BRISTOL HOUSING COMPETITION.

This Competition was limited to architects practising within the province of the Bristol Society of Architects, *i.e.*, the Counties of Somerset, Dorset, Wilts and Gloucester, and was held to assist in solving the housing problem in various outlying districts of Bristol, viz., Fishponds, Knowle, Sea Mills, Shirehampton, St. George and Filton.

The Committee obtained the services of Sir Ernest Newton, A.R.A., F.R.I.B.A., to act as assessor in collaboration with its Advisory Architect, Mr. C. F. W. Denning, F.R.I.B.A.

The designs of the following architects were chosen by the assessors :—

*Mr. Cyril A. Farey, Salisbury.
*Mr. E. C. H. Maidman, Parkstone.
*Mr. S. S. Reay, Bristol.
*Mr. B. Wakefield, Bristol.
Mr. Austin B. Botterill, Bristol.
*Mr. Heathman and Miss Blacker, Bristol.
Mr. H. Stratton Davis, Gloucester.
Mr. W. H. Watkins, Bristol.
*Mr. Arnold Mitchell, Lyme Regis.
Mr. T. Bradford Ball, Weston-super-Mare.

Each of the above will receive a premium of £150.

The six marked with an asterisk will form a Board, under the presidency of the advisory architect, to carry out the scheme in conjunction with the City Engineer.

Briefly, the accommodation of the various types is as follows :—

Type 1.—Living-room, scullery, separate bath room, two bedrooms, and various offices.

Type 2.—Living-room, scullery, separate bath room, three bedrooms, and various offices.

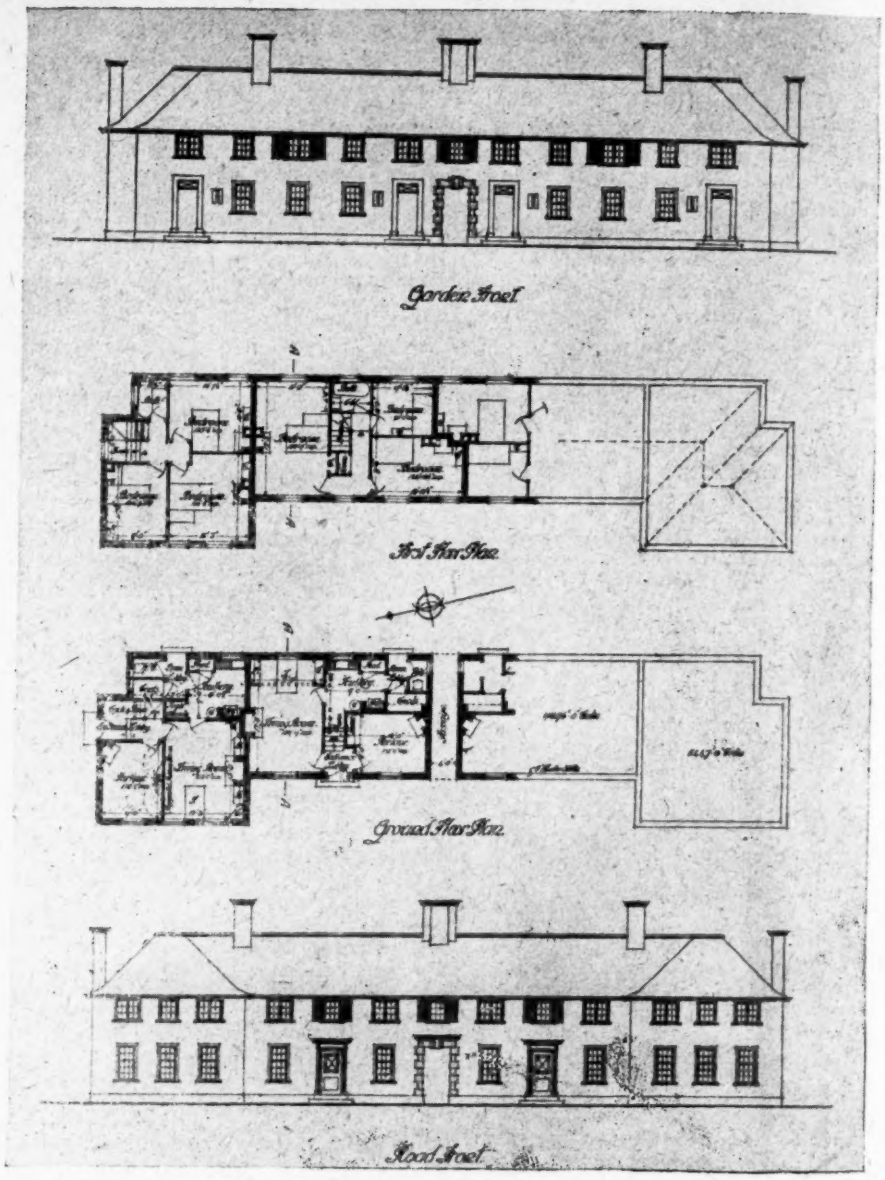
Type 3.—Living-room, scullery, separate bath room, four bedrooms, and various offices.

Type 4.—Living-room, parlour, scullery, separate bath room, two bedrooms, and various offices.

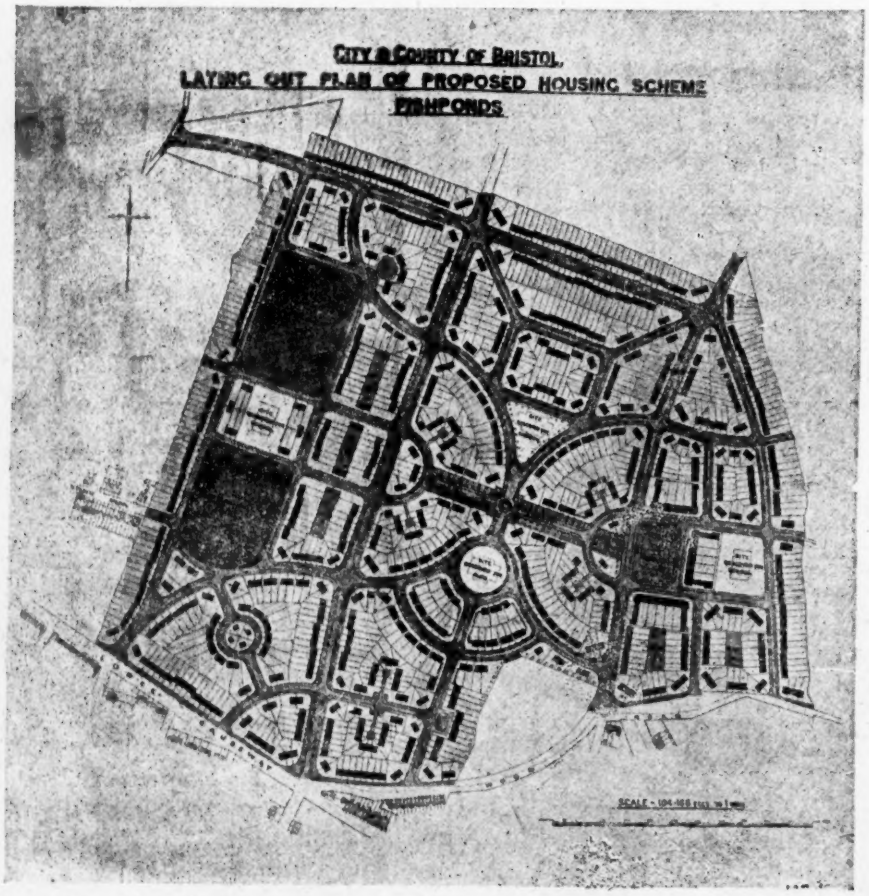
Type 5.—Living-room, parlour, scullery, separate bath room, three bedrooms, and various offices.

Type 6.—Living-room, parlour, scullery, separate bath room, four bedrooms, and various offices.

Bath rooms to be on the ground floor for preference in all cases. The conditions specially mentioned that the introduction of dormer windows was to be eliminated as far as possible, and roofs were to have a minimum pitch of 45 degrees.



Bristol Housing Competition : Type No. 5.
Premiated Design by Mr. B. Wakefield, Lic. R.I.B.A.



From the premiated designs, the following appealed to us, on points of good planning combined with pleasing elevational treatment :—

No. 18, by Mr. S. S. Reay, of Bristol.—Three designs, showing types 2, 3 and 6. These designs show delightful composition for cottages in blocks of four. The plans are well arranged and convenient throughout, and show evidence of much thought, combined with a first-hand knowledge of housing work. The ground floor bedroom in type 3, for invalids, cripples or wounded, being most commendable. The elevation shows a fine sense of architectural design, and is rendered with a most refreshing freedom and vigour.

No. 2, by Mr. Cyril A. Farey, of Salisbury, shows three types, generally well planned, although exception must be taken to the relation of fireplaces and doorways in some bedrooms. The elevations are well designed, and handled with a breadth and simplicity well suited to the materials used.

No. 5, by Mr. E. C. H. Maidman, of Parkstone, includes five designs, showing types 4, 5 and 6. Of these type 4 and two variations of type 6 are most pleasing, showing good planning combined with versatile exteriors, well drawn, and showing a sense of refinement and simple dignity.

No. 30, by Mr. W. H. Watkins, F.R.I.B.A., of Bristol.—Three designs, showing types 1, 5 and 6. Well planned throughout, especially as regards the entrances and relation of bath rooms, sculleries, &c. The elevation is well designed and drawn, and entirely suitable for the materials used, characterised by a breadth and simplicity of treatment, and pleasantly free from all fussiness and architectural affectation.

No. 19, by Mr. B. WAKEFIELD, Lic.R.I.B.A., of Bristol.—Three designs. The plans are good, and the elevations show merit. The general get-up of the drawings is rather unhappy, and the designs would probably look better in execution.

No. 26, by Mr. H. HEATHMAN and Miss BLACKER, of Bristol.—Seven strainers. These designs call for no special comment. The plans are good, but the elevations lack character.

No. 37, by Mr. ARNOLD MITCHELL, of Lyme Regis.—Twelve strainers. These designs, also, strike no special note, either in plan or elevation. They are well drawn, and show an enormous amount of labour, but are lacking in restraint and with the "picturesque" element far too much in evidence.

WAR MEMORIALS.

Printers' Memorial.

The Lloyd Memorial (Caxton) Seaside Home is to erect a new wing at the Home, at a cost of £6,000, as a war memorial. Mr. H. F. Parker, of 80, Blackfriars Road, S.E., is the secretary of the Home.

Ripon.

The War Memorial Committee has recommended that the war memorial for the town shall consist of a column thirty feet high, on a stepped base with a semi-circular platform, with a stone seat at the back. The column will be surmounted by the city coat-of-arms, and panels will be provided for a Roll of Honour. The plans are to be submitted to Mr. Sayer, architect, for approval.

Industrial Reconstruction Council.

The Industrial Reconstruction Council is holding open-air meetings on Tower Hill every Monday, at 1 p.m., at which the provision of Whitley Councils for each industry is being advocated.

ARCHITECTS' AND SURVEYORS' ASSISTANTS' PROFESSIONAL UNION.

IN furtherance of the formation of this union, a crowded meeting, presided over by Major Ernest Gray, M.P., L.C.C., was held at Caxton Hall, Westminster, on June 13. The union has for its objects the improvement of the status and of the efficiency and training of professional architectural assistants; the payment of adequate salaries and for overtime; open references; the abolition of unpaid assistants; the representation of assistants on professional bodies; and the encouragement of a feeling of co-operation between practising architects and their assistants for their mutual benefit.

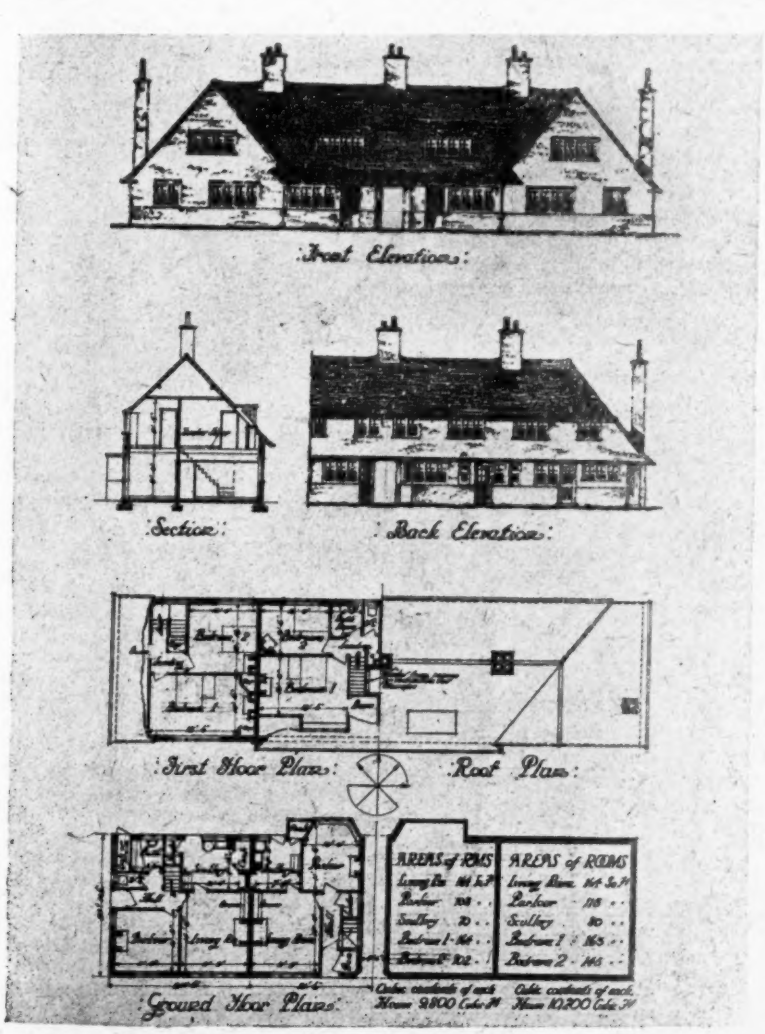
The chairman said that, although he was not a member of the architectural or surveying professions, he highly appreciated the honour shown to him in being invited to occupy the chair. They had held one meeting, more or less formal, but the meeting that night could be looked upon as the inaugural meeting of the organisation. They had for their objects the advancement of the profession to which they belonged, the improvement of the conditions of each individual and, through their organisation, the power to negotiate in a corporate capacity with their employers. If these were their objects, it appeared to him that they were free from any adverse criticism, and would commend themselves to anyone whose interests were not merely personally selfish but who desired the improvement of the status of the profession, and making it more worthy of the great trust placed in it by the public. It was the oldest of all the professions, and had left its imprint on the history of the world. It would play a larger and more important part in the future destiny of the world. It would be a matter of great pleasure to him to serve the union in the House of Commons and on the London County Council.

Mr. E. H. Walker (Chairman of the Executive Committee of the Engineering and Shipbuilding Draughtsmen's Association) said that he had been invited to lay before the meeting certain methods which had been found to be of advantage in his own association. He did not propose to go into any elaboration of detail, but suggested that the organisation should be made as democratic as possible and its policy should be the direct outcome of the wishes of its members, and not be dictated by its officials, who should be the servants of the union as a whole. Probably no one was better able to advise the membership on problems which presented themselves than the officials, but having given their advice, it was even more important that the officials should carry out the wishes of the membership.

Mr. E. H. Glasspole (of the Executive Committee of the E.S.D.A.) described the organisation of the Engineering and Shipbuilding Draughtsmen's Association, and referred to the close relationship which existed between the architectural and engineering draughtsmen. He said that very careful organisation was required and should be on a national basis. He placed the greatest value upon propaganda by means of letters and publicity in trade journals and provincial newspapers. He strongly urged them to register as a trade union when the time arrived, and thereby gain all the advantages which were open to them.

Mr. Maurice Webb, F.R.I.B.A., said he had been invited to attend the meeting in his capacity as President of the Architectural Association. He took a great interest in the formation of the Union. When he heard that they wanted him to address the meeting, he asked the Council of the Association what attitude it took towards the Union, and the Council was unanimous in saying that it looked upon the Union with every possible sympathy. The Association had allowed the Union to use its address and offices up to date, and so long as it was conducted on its present lines the Association would be able to help it to that extent. If there were other ways in which they could help the Union, educational or otherwise, they would be delighted to do so. The war had hit architects and architecture very hard, and the profession was about the only one in England which had been absolutely shut down. In civil life, as in war, unity is strength, and he looked upon the Union as a great asset to the profession, so long as it was properly run and did not get into the hands of a few hot-heads. He wished it every possible success in the future. If the status of the profession was raised, the status of everybody in it would be raised also—the incomes of practising architects would go up, and also the incomes of the assistants. He hoped the Union would work in co-operation with the other responsible societies in the profession. It seemed to him that education was one of the first great planks in their problem, and the more educated the man the bigger wage he could command. The Architectural Association might be able to help in the matter, and there was no doubt that the Association would be prepared to offer some scholarships on the recommendation of the Union, when it had arrived at sufficient strength. In the profession there was one big benevolent association, but it did not touch assistants. He thought that the assistants should have a benevolent institution of their own, or link up with the one which already existed. He also suggested that the Union should inaugurate a good employment register. There was one at the Institute and one at the Association, but a really good one was required. It would also be an advantage if the names could be graded, and some sort of a guarantee given that the man recommended for employment would be a good one. Mr. Webb wished the Union success, and again expressed his sympathy with the movement.

Mr. R. G. Ll. Evans, in a breezy speech, gave particulars of the origin of the Union (which arose from correspondence which appeared in the pages of the *Builder*), and said



Bristol Housing Competition. Premiated Design by Mr. E. C. H. MAIDMAN.

that it was up to the meeting to carry on the work. Correspondence had been received from all over the country and subscriptions had been received from Newcastle-upon-Tyne, South Wales, and the East Coast. Architects were, he said, the most lackadaisical of all professional men. The Union was not a Red Flag organisation, but the outcome of modern conditions, which had at last turned "that sleepy dog," the architectural profession, to a desire for better things. The subscription was 10s. per annum.

In reply to a question, Mr. Evans stated that the Committee consisted of an equal number of men engaged in official and unofficial offices, with one surveyor.

Ballot papers, containing seventeen names of members for election to the Committee, were distributed, with a request that two names should be struck out, leaving a Committee of fifteen. The point was raised, however, that at that early stage the members were not well known to one another, and the two best men might be the ones not to be elected. Eventually, it was decided that the Committee should consist of seventeen members, and the whole of the candidates were elected. They were. Messrs. E. A. Buxton, A. G. Channer, R. A. Duncan, R. G. Ll. Evans, G. F. Fox, P. W. Farmer, A. A. Geen, A. J. Hurden, J. B. Hector, W. Mayhew, A. Mather, C. McLachlan, W. G. Mitchener, F. R. Taylor, W. E. Tickner, G. B. Tubbs, and A. D. Reid.

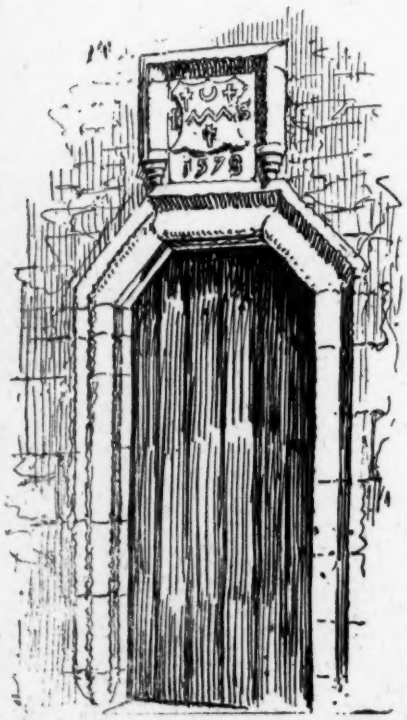
A motion was put and carried unanimously that the Committee be empowered to set up machinery and draw up the necessary powers for the working of the Union, which are to be submitted to the Union at a later meeting before being put into operation.

Votes of thanks were passed to Messrs. Walker and Glasspole, who promised to assist the Union in every way, and placed the experience they had gained in connection with their own Association at the disposal of the Committee.

On the motion of Mr. Evans, a vote of thanks was passed to Mr. Maurice Webb, to whom they were grateful for having expressed his sympathy as an employer.

In a concluding speech, the chairman said that the housing schemes at present being promoted offered great opportunities for beautifying the country, and he expressed the hope that everything would not be sacrificed to utilitarianism. The public looked to the Union and kindred bodies in such matters. In the past, model dwellings had been mainly models of ugliness.

A vote of thanks to the chairman terminated the proceedings.



Church door Hawkshead

CONCRETE FOR HOUSES.

In a letter to *The Times*, on June 9, Major-General A. S. Collard, who was Director of Inland Docks and Waterways during the war, said that a great deal could be done to expedite building if officials and architects, instead of conservatively sticking to old methods, adopted new methods and materials. There is one way in which the shortage of bricks can be overcome, and that is by laying to heart one of the most valuable lessons of the war, and using concrete blocks and slabs in the various housing schemes. Unfortunately, the very word concrete is like a red rag to a bull to many architects and builders in this extraordinarily conservative country of ours. Let it, however, be conceded at once that some prejudices are well founded; in the past, and even to-day, houses are being built on the unit principle, each house exactly like its fellow, with walls made *en bloc*, and the concrete poured in. This is admittedly bad from every point of view, and concrete, like everything else, is liable to misuse and abuse; but the same is equally true of brick, yet no one dreams of condemning all brick work because it can be, and is, used to construct jerry-built houses.

Good, dry, sanitary cottages, architecturally correct and pleasing to the eye, can be built with concrete blocks both cheaply and quickly, if the proper methods are employed. Crayford Garden Village is an example, and only recently one of *The Times* special correspondents wrote in an article on Chepstow: "Whatever may be the fate of the national shipyards, the Government will be able to point with pride to the garden cities they are erecting there." These houses are certainly picturesque, and are excellent examples of what can be done to meet the present demand for healthier homes for the workers. And the reason is, that in these cottages concrete has been used properly and scientifically. The outer walls are all hollow, with a proper space between each leaf, and care has been taken to see that there is no connection between these leaves at the door openings, &c., and the concrete is also of the right texture. If must be remembered that the secret in producing a good block for house building is to make it properly and make it of concrete that is only just moist; a block made of wet concrete will never be satisfactory. The blocks for these houses are being made with 'Winget" machines, which seem to produce exactly what is required.

Modern cottages built as described are, he says, as comfortable as other houses, and a great deal more satisfactory from the point of view of health. Concrete blocks of the right consistency, with a continuous cavity, give a dry building with no chance of condensation, and remove all the old objections to concrete construction. The advantages of concrete block construction are many and varied. The blocks are larger than bricks and can therefore be laid quicker, there are fewer joints, and, therefore, less mortar, which both mean less cost. On many sites suitable aggregates can be found close at hand. This means no rail transport, whereas bricks have nearly always to be brought a considerable distance by rail, which in these days of rail congestion is a great point in favour of concrete blocks made with local aggregate. The blocks will always work out cheaper except where bricks are made in the immediate locality, but where very considerable saving can be effected is in the employment of waste materials, such as clinker, slag and sagger. The former is ideal for the inner leaves and internal walls of cottages, and can be used for the outer leaves in houses that are to be rendered or rough-cast. To-day some of the large gas companies have to pay for the removal of their clinker. What could, therefore, be cheaper than to employ it for making blocks for houses everyone needs?

Another advantage the concrete block has is that anyone can make it under proper supervision, and the blocks can be used soon after they are made. At the present time we are short of skilled brickmakers. Why not, therefore, he asks, employ the demobilised soldier on making blocks to make up the deficiency?

There is no reason why the exterior of houses and cottages built with concrete blocks should not be varied just as much as brick ones. Many architects object to concrete as giving a cold effect, but this applies equally to certain kinds of stone, and can be remedied by architectural treatment. The elevation of houses can be wholly "rough-cast," or bricks can be used for the outer leaf of the lower stories only, and the upper portion "rough-cast." Where an all-brick face is required, the outer leaf can be built of brick and the inner leaf and the internal or partition walls of concrete blocks and slabs.

Cottages built of concrete blocks surpass all ordinary types of construction for cleanliness and all hygienic conditions, as well as for durability and rapidity of construction, and they are more economical to build; but he repeats, the blocks must be made in the proper way and the constructional details must be correct. When this is done success is assured.

In a reply, published on June 11, Mr. Gordon Allen, F.R.I.B.A., who was the architect in connection with the Crayford Garden Village, states that the prejudice against the use of concrete for building purposes is difficult to explain. In the past there have been unfortunate examples of concrete houses, but during recent years the whole method of this kind of construction has been revolutionised. To-day one can inspect complete townlets of concrete cottages that are satisfactory both externally and internally.

At Crayford, more than 600 cottages were built, some 400 being erected in concrete—this in spite of the presence of a brickyard adjoining the estate. These concrete cottages were put up rapidly and very economically, the walls consisting of blocks made from gravel on the site. The dwellings are of varying types—a few detached, many pairs, several groups—but each contains a living-room, parlour, bath, and either three or four bedrooms. The average cost per house, including all fees and charges, roadmaking, sewerage, drains, fencing, &c., was £325 complete. All the cottages have proved to be dry, cool in summer and warm in winter, and the question of concrete walls "sweating" through condensation has not arisen.

Concrete houses can undoubtedly be as artistic as those of any other kind, for no building material is more adaptable. Naturally, Georgian brick architecture cannot be reproduced in concrete; but away from clay-bearing districts houses of this style often appear to be jarring and out of keeping with local tradition. And it is in such parts of the country, where the use of bright red brickwork would offend nature—as well as the neighbours—that suitable aggregates for concrete are usually found. This gravel or broken stone, after having been converted into concrete blocks, will produce walls possessing charming colour effects. Concrete walls, too, can becomingly be clothed with pleasantly-textured roughcast, to "weather" into soft shades with the passing of the seasons.

Much time and labour is saved when concrete blocks are used, as one 16 in. by 9in. by 9 in. block is equivalent to 10 bricks. The advantages as regards transport are also considerable, as some sort of aggregate can be obtained almost everywhere, and cement is "handy" and concentrated.

During the war the employment of concrete solved the problem caused by the absence of other building materials, as at Richborough, Manston Air Station, Chepstow, and elsewhere. With the prospect of a shortage for many years to come in the supply of bricks, timber and metals, concrete seems bound to play a leading part in the national housing programme.

Some illustrations of the Crayford Garden Village appear in this issue.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At a meeting of the Institute, on June 16, the following were elected as Fellows :—

Adams, P. H., Warlingham.
Allison, R. J., O.B.E., Highgate.
Bridges, E. J., Salisbury.
Briggs, M. S., Mill Hill.
Bunney, M., M.B.E., Meadway, N.W. 4.
Cheston, J. A., Sutton.
Comyn, H., Orpington.
Franck, J. E., London, W. 14.
Gibbons, J. H., M.C., Manchester.
Hall, E. S., Bedford-square, W.C.
Hathaway, P. W., Rochdale.
Hinchliffe, P. A., Barnsley.
Hobday, W. H., Clapton.
Moore, A. H., Romford.
Myers, N. T., Cambridge.
Simpson, W. B., Enfield.
Towse, S., Hayward's Heath.
Ward, W. H., M.A. Cantab., F.S.A., London, W.C. 1.
Watson, W. E., F.S.I., F.R.San.I., Liverpool.

In accordance with the concessions granted to students serving with H.M. Forces, the following have been elected, by ballot, as Associates :—

Archer, H. D., Leyburn, Yorks.
Arnold, R. C., Ilford.
Atchison, H. P. R., Sheffield.
Bannister, H., Fulham.
Barley, F. A., Westcliff-on-Sea.
Bates, C. F., Newport, Mon.
Beaverstock, H., Nottingham.
Bestow, S. F., Newcastle-on-Tyne.
Bisiker, A. M., London.
Bonser, K. J., Sutton.
Brewill, L. C., Edwalton, Notts.
Bridge, T. M., Walkden, Lancs.
Brown, J. M., Dundee.
Brueton, B. F., London, S.W. 6.
Butcher, A. J., Coventry.
Cawkwell, R., Sheffield.
Cheadle, J. O., Lincoln's Inn, W.C.
Cheriton, W. G. L., Streatham.
Church, L. D. A., Epping.
Clarke, J. A., Manchester.
Cole, E. R. F., Liverpool.
Copplestone, T. S., Clapham.
Crossland H. E., Sutton-in-Ashfield.
Davies, E. C., Redhill.
Donaldson, B., Gosforth, Northumberland.
Doughill, W., Wensleydale, Yorks.
Dyson, E. V., Leeds.
Eiloart, R. E., London.
Elsworth, L. A., Golder's Green.
Farrer, J. C., Crouch End.
Fisher, K. J., Brecon.
Foote, A. A., Edinburgh.
Foster, W. S., Rotherham.
Foster-Turner, F. W., Edmonton.
Garrard, C. P., Ipswich.
Grellier, C., Epsom.
Hall, R. B., Letchworth.
Harrison, A. St. B., Beckenham.
Hart, E. J., Salford.
Heywood, L., Bolton.
Hill, G. N., Wallasey.
Honeyman, J. M., Glasgow.
Hooper, A. F., Beckenham.
Hopkins, W. W., Bromley.
Howe, J. L., Northwood.
Johnson, A. G., Wanstead.
Jones, C. F., Cardiff.
Jones, N. W., Swansea.
Kellock, A. D., Edinburgh.
Knight, D. E., West Bridgford.
Knight, W. J., Fulham.
Lawrence, F. O., Liverpool.
Lewis, H. M., Pontypridd.
Lyne, D. R., Golder's Green.
McBeath, J. G., Sale.
Mackay, H., London, S.W. 6.
Mackenzie, K. B., M.C., Huddersfield.
Marchant, F. O., M.C., Hankow, China.
Marchinton, J. E., Sheffield.
Martin, W. H., Upper Norwood.
Martin-Kaye, D. N., St. John's Wood.
Meredith, J. N., Prestatyn, N. Wales.
Mortimer, A. L., Leeds.
Morley, C. S., Southfields.
Newboult, B., Shipley.
Norris, E. B., Isle of Man.
Palmer, R. L., M.C., London, W.C.
Parkes, E. M., Northwich.
Portsmouth, O. S., Swansea.
Richley, N., Percy Main, Northumberland
Robertson, D., Dumfries.
Robertson, G. A. K., Belfast.
Rubery, S., Wolverhampton.
Shenstone, G., Leigh-on-Sea.
Shibley, A. R., Sheringham.
Slater, N. W., Wolstanton. Staffs.
Spooner, F. P., Finchley.
Stainsby, G. P. London, N.W.
Stewart, C. B., Darlington.
Stewart, A. K., Loughgilly, co. Armagh.
Stobbart, F. R., Newcastle-on-Tyne.
Stone, J. T., London, N.W. 4.
Stoner, A. P., Brighton.
Streadwick,, V. J., Brixton.
Strickland, H. C. W., Sunderland.
Sutcliffe, F., Colwyn Bay.
Taylor, J. A. C., Oldham.
Thomas, W. N., Birmingham.
Thomerson, H. A., Clapton.
Warwick, J. G., Peterborough.
West, J. A., N'tt'gh'm.
Wilsdon, P. T., London.
Wilson, J., Glasgow.
Wood, T. S., Birmingham.
Wright, C. H., Aylesbury.

COMPETITION NEWS.

Liverpool.

The Corporation Reconstruction Committee has decided to invite competitive architectural designs for the reconstruction of the Pierhead site. Premiums of 1,000, 500 and 250 guineas are to be offered.

Penzance.

For the War Memorial Committee.—Designs for a war memorial. Particulars from Mr. C. E. Venning, 38, Morrab-road, Penzance. Sending in day, July 14. (See our advertisement pages June 6.)

Nottingham.

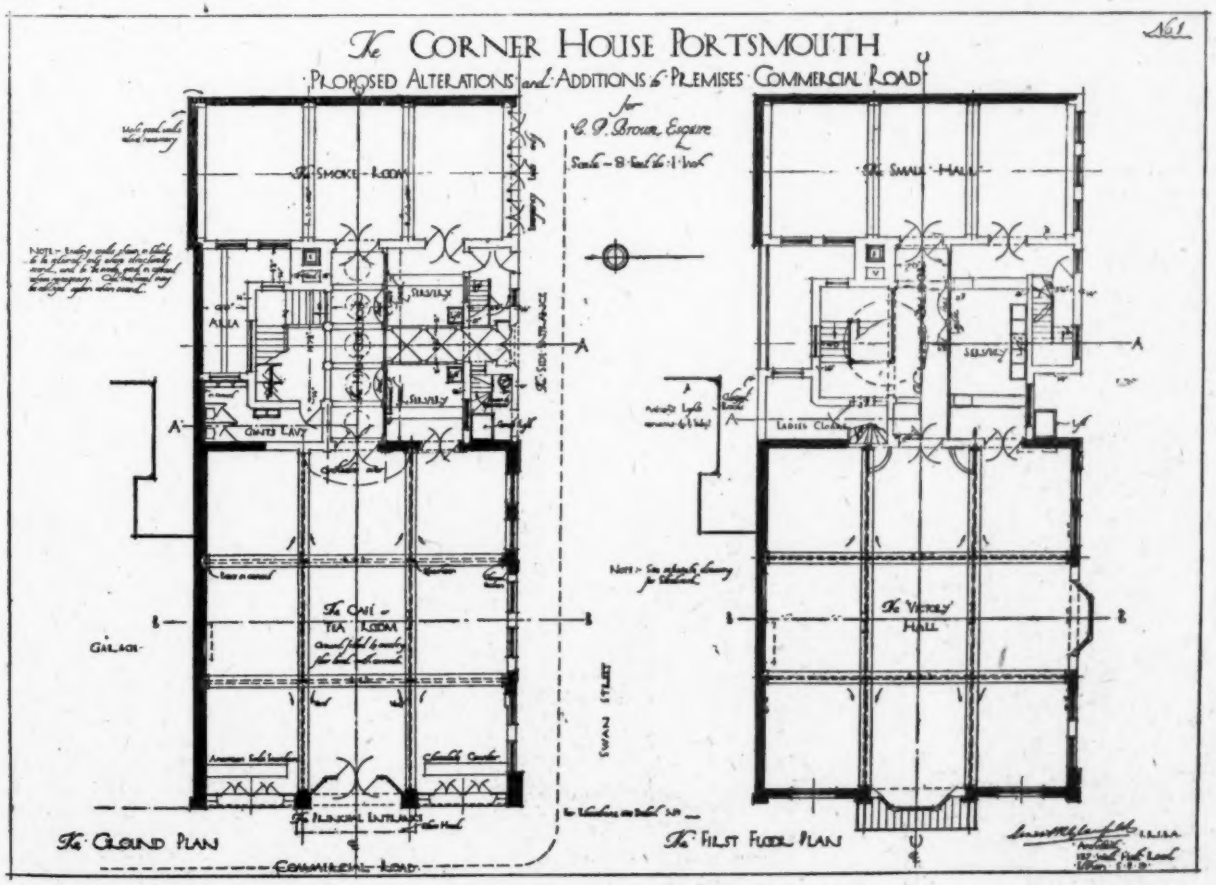
For the Corporation Housing Committee. Plans for the laying out of the Sherwood Estate of 127½ acres, and for designs for working-class dwellings to be erected thereon. Particulars from the Town Clerk, Nottingham. (See our advertisement pages June 6.)

Incorporated Institute of British Decorators

The Institute is offering two travelling studentships, of £25 each for competition. The drawings must reach the Secretary of the Institute, Painters' Hall, E.C., 4, not later than September 29, 1919. Further particulars may be obtained from the Secretary.

Bridlington.

For the War Memorial Committee.—Design for a war memorial. Premiums £100 and £50. Sending-in day, September 30. Particulars from the Secretary, 79, Quay-road, Bridlington. (See our advert. pages to-day).



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Concrete Cottages. MR. GORDON ALLEN, F.R.I.B.A, Architect.

ILLUSTRATIONS.

Bristol Cottage Designs.

We give this week the winning designs in the Bristol Housing Competition.

Crayford Village Extension.

This housing scheme was planned just before the outbreak of hostilities, and on account of the war—as the houses were mainly for Messrs. Vickers' employees—the scheme had later to be increased in size. By July, 1915, more than 250 dwellings had been completed. Some 610 cottages were eventually built on the estate, which is 60 acres in extent.

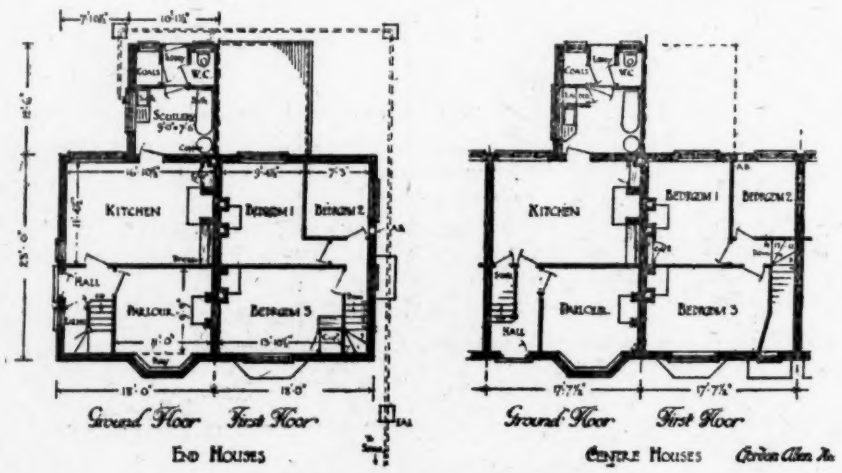
The land falls towards the south, down to the River Cray. Various communications and rights of way had to be maintained, but otherwise the positions of roads was decided by contours and other natural features of the site. The chief street—Crayford Way—had to follow the line of the West Kent main sewer, which runs the length of the estate. As this road takes most of the traffic, it was made stronger and wider than the minor streets. By constructing the latter narrower and of less heavily-metalled formation, a considerable saving in roadmaking was effected. Those portions of the site that were too hilly for building purposes were utilised for allotments and open spaces. There is, for instance, a large dip where the village green is situated. By careful planting this green has been made a pleasant feature, and the sites around it were retained for the larger and public buildings. Hedges and trees, including a fine orchard on a hill, were saved, while another hill was levelled to form a building site and for the sake of gravel found there.

The cottages are of varying types, built in pairs, blocks, groups, squares, and crescents, to avoid a monotonous effect. In spite of war conditions, prices were remarkably low. The average cost per cottage, complete with all charges, road-making, sewerage, &c., was £325. Each cottage has a good-sized living-room, with the correct aspect, a parlour, at least three bedrooms, and a reasonable garden. Three-hundred-and-ninety of the dwellings have walls and partitions of concrete blocks made by "Winget" machines from gravel found on the site; the remaining 220 have 11 in. cavity brick walls. Mr. A. J. Glock, of Lewisham, built the concrete cottages. Messrs. Thomas & Edge, of Woolwich, were the contractors for the brick dwellings and the road and sewerage work. The project was carried out under the auspices of the Housing Organisation Society, the architect being Mr. Gordon Allen, F.R.I.B.A.

The "Corner House," Portsmouth.

The building is the main portion of a scheme now in progress, and is the adaptation of a coach-builder's showrooms and factory. The size and shape of the main halls were thus determined, and were utilised entirely to provide restaurant accommodation, the kitchens, staircases, serveries, store rooms, &c., being planned on a vacant site at the rear. The accommodation provides for three large restaurants, and two smaller rooms, 40 by 20, service being controlled from kitchens, placed centrally on the third floor.

The illustration shows the main halls, which will be executed in cement rendering, or, if funds permit, in "Carrarra." The "Victory Hall" will be executed in fibrous plaster. The interior generally will be treated on Renaissance lines. The builder is Mr. Frank Privett, of Southsea and Hazelmere, and the architect is Mr. Ernest B. Glanfield, F.R.I.B.A., 6, Raymond-buildings, Gray's Inn, W.C.



Concrete Cottages at Crayford.

Bolton Secondary School.

Our illustrations this week include the second premiated design for the new secondary school at Bolton. The illustration is exhibited in the present Royal Academy Exhibition, the design being by Messrs. H. Field & H. D. Pearson, FF.R.I.B.A.

MEETINGS.

FRIDAY, JUNE 20.

The National Housing and Town Planning Council (at the Royal Society of Arts).—Conference 10.30 a.m. to 1 p.m.—2.30 p.m. to 5 p.m.

The Town Planning Institute (to be held at 12, Great George-street, Westminster, S.W.).—Fifth Annual General Meeting. 5.30 p.m.

SATURDAY, JUNE 21.

The National Housing and Town Planning Council (at the Royal Society of Arts).—Conference continued 10.30 a.m. to 1 p.m.—2.30 p.m. to 5 p.m.

MONDAY, JUNE 23.

The Royal Institute of British Architects.—The presentation of the Royal Gold Medal for the promotion of Architecture to Mr. Leonard Stokes, A.R.I.B.A. 8 p.m.

WEDNESDAY, JUNE 25.

The Industrial Reconstruction Council (Sadler's Hall, Cheapside, E.C.2.).—The Rt. Hon. C. W. Bowerman, M.P., on "Some Industrial Problems." 4.30 p.m.

THURSDAY, JUNE 26.

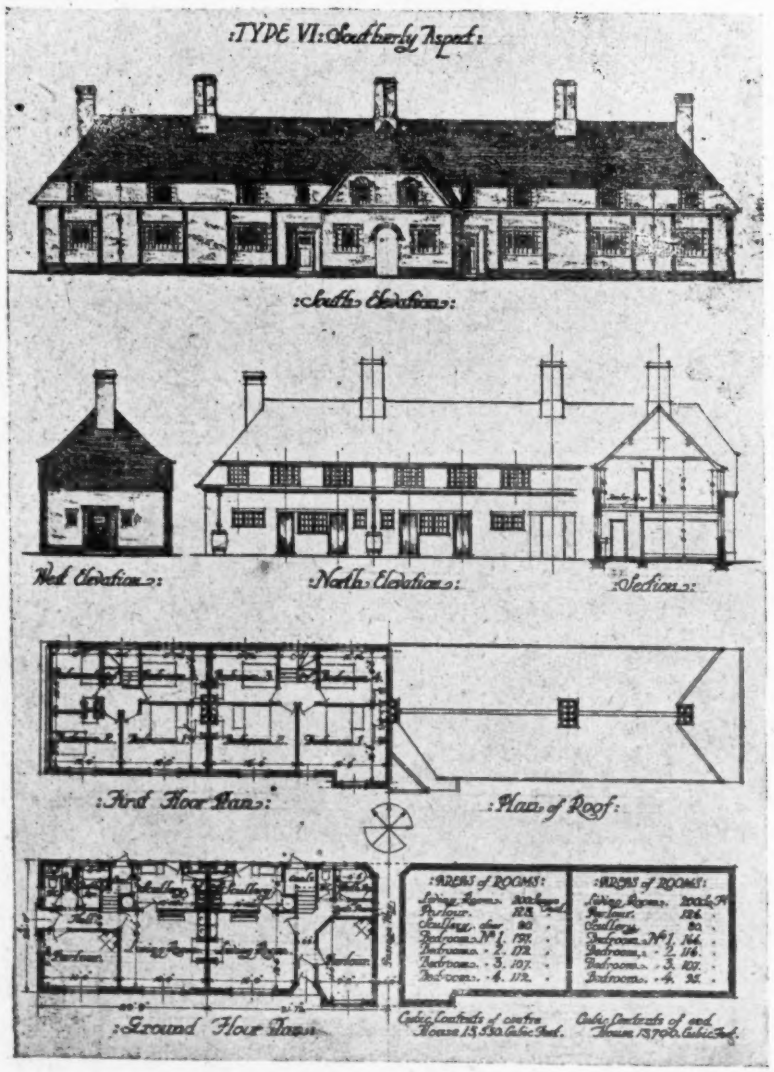
The Institution of Municipal and County Engineers (at Birmingham). — Forty-sixth Annual General Meeting and Conference.

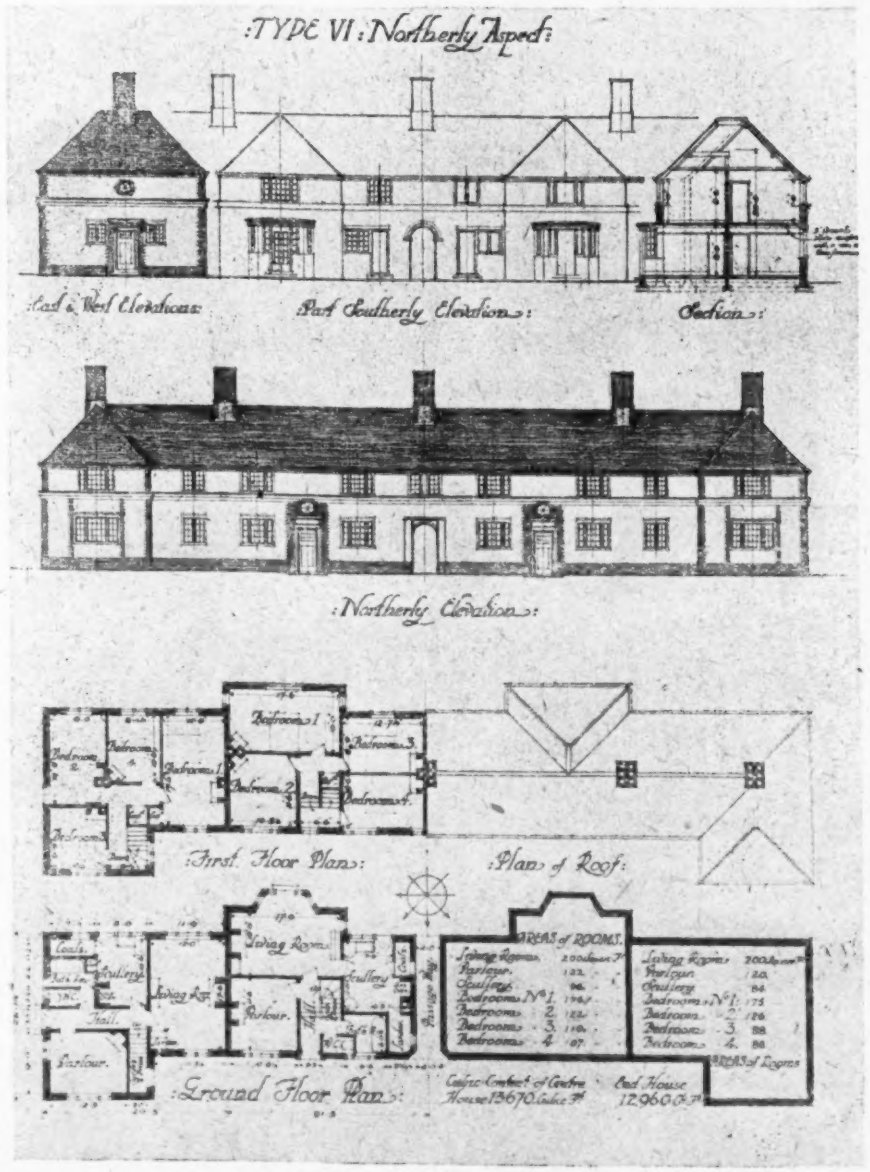
The British Waterworks Association (to be held at Leeds).—Mr. C. G. Henzell, M.Inst.C.E., on "The National Control of Water Sources," also the formation of "The Joint Industrial Council for the Waterworks Undertakings Industry."

The London Society (at the Royal Adelaide Gallery, King William Street, Strand, W.C.).—Mr. G. Holt-Thomas on "London and its Future Aerial Transport." 7.30 p.m.

Moor Park, Hertfordshire.

Moor Park, Hertfordshire, which is shortly to be sold by order of Lord Ebury, was first enclosed in 1460, and has been described as one of the most beautiful parks in the country. The house, which was a perfect example of Tudor architecture, was, states the *Times*, converted to its present style about 1720. Much of the decorative work was done by Sir James Thornhill, Amiconi, and Cipriani, and the interior reminds one more of a Genoese palace than an English country house.





Bristol Housing Competition.

Premiated design, by Mr. E. C. H. MAIDMAN,

THE GEOLOGY OF SANDS AND AGGREGATES FOR CONCRETE MAKING.*

BY D. G. H. BOSWELL, D.SC.

THE essential constituents of concrete are the aggregate, or lumps of broken materials, and the matrix or binding substance, which is usually cement or lime. Sand is frequently added to the mixture, or concrete may be made from sand and cement alone. In America the term "aggregate" includes sand. The aggregates listed in the specifications of the British Fire Prevention Committee have been divided into two classes, natural and artificial. All the natural substances are rock substances, which come within the purview of geology, and include gravel (ballast), igneous (or fire-formed) rocks, such as granite, basalt and other lavas, pumice, &c., and sedimentary rocks, such as sandstones, quartzites, limestones, &c. The artificial aggregates result either directly, or as by-products, from the applications of industrial processes to geological materials, and include coke-breeze, clinker, blast-furnace slag, brick, terra-cotta and burnt clay.

Rocks which have resulted from the cooling of molten magmas are known as igneous rocks, and their texture may vary from coarsely crystalline to glassy, according to whether they have cooled slowly or rapidly. Pumice is produced where steam and other contained gases have blown the rock into a froth. The decomposition of igneous and other rocks, under the influence of frost, rain and heat, aided by running water and wind, eventually results in the accumulation of the debris at the bottom of the seas, lakes, and rivers, or even scattered over the land These detrital rocks are known as clastic or sedimentary. Rocks composed of fragments blown from volcanos are included in the clastic group. Both igneous and clastic rocks may subsequently be altered as a result of the action of either heat alone (by contact with injections of molten magma) or of intense earth pressure, when the energy is frequently dissipated in the form of heat. In this way, rocks belonging to the third group may be produced; they are said to be metamorphic because of the changes in mineral constitution and texture which have been produced in them.

In all the industrial applications of rocks, attention has to be paid either to the mineral composition or the texture, or frequently to both. The present knowledge as to the effect of the mineral constitution, or even the ultimate chemical composition, upon the setting of concrete is not so complete as might be desired. Much more information regarding the effect of the size and shape of the aggregate upon the durability of concrete is available. For concrete making it is important to know how coarse in texture the rock fragments may be, and the character of their fractured surfaces. The latter depends upon their mineral constitution, which may also affect the setting of the cement. Other questions concerned with the binding qualities, dust-production, &c., have also to be considered. It is generally accepted that soft sandstones are to be avoided for concrete, and that siliceous rocks are the best; practically speaking, the bond is rarely siliceous in soft sandstones. The matrix of silica leads to great strength and clean, sharp fracture of the rock, firstly on account of its hardness, and secondly because the silica frequently grows crystallographically on, and in optical continuity with, the surface of the quartz grains (being of the same chemical composition). The individual grains thus grow until they meet one another and interlock firmly. The structure can best be seen in polarised light under crossed nicols. Rocks of this character break across the sand grains and matrix equally and yield smooth, plane surfaces and sharp edges. Soft sandstones may also be converted into quartzites of this type by re-crystallising effects of heat, or of earth stresses during mountain-building movements. Such quartzites would belong to the metamorphic class of rocks. Cementing by argillaceous matter does not yield the best type of sandstones for aggregate, nor do the results of metamorphism upon such rocks yield a satisfactory product.

It has been stated that, far from being inimical, iron oxide in rocks may be useful on account of the chemical actions into which it enters with the cement. Unfortunately, most sandstones cemented with this substance do not show a desirable degree of compactness; a few, however, such as the Carstone of the Lower Greensand, particularly from Norfolk to Oxfordshire, are fairly hard. Calcareous cements may be chalky and amorphous in character, when the resulting rock is soft, or composed of crystalline calcite, when a hard, compact stone may be yielded. In the latter case, as in quartzites, the fracture of the stone breaks across the sand grains and not round them—a very desirable property in concrete making. Occasionally natural concrete, known as "calcrete," is met with, formed by the cementation of sands and pebble beds by lime originally in the form of carbonate. The matrix frequently shows no effervescence at the present time with acid, tricalcic silicate having probably been formed, as in the setting of cement. Calcite can be scratched with a knife; quartz cannot. Aggregate of calcareous sandstone, therefore, shows heterogeneity in hardness as well as in composition. Portland cement containing more than 8 per cent. of magnesia is objected to on the grounds that expansion and loss of strength are likely to occur in the course of time. It would, therefore, appear that sandstones cemented with dolomite should, if possible, be avoided.

Ballast (gravel) is usually incoherent, as in the case of Thames ballast, and the question of cementing material does not arise.

Pebbles should be broken before use in concrete work, to destroy the uniformity of size and roundness. Washing of gravel is advisable to clean it from adherent matter.

Limestones may be produced by organic action or by chemical precipitation from the waters of lakes and seas. Soft limestones are not suitable for concrete making, nor, on the whole, are those of organic or oolitic origin. They tend to break and flake irregularly, and an oolite rarely breaks across the grains. Crystalline limestones have a sharp, clean fracture and are homogeneous, but glide-planes are very easily set up in calcite crystals by pressure. Calcite has also an excellent cleavage; deformation and fracture are thus liable to take place. Limestone is neither as hard, nor structurally as strong, as quartzite.

Whereas most sedimentary rocks consist of grains cemented together by chemically similar or dissimilar material, igneous rocks are made up of minerals crystallised together, and the essential feature is the close contact and interlocking of the grains. Plutonic rocks are coarse-grained, and the individual minerals are, on the whole, equi-dimensional. This texture has been termed granitic, from its being exhibited so frequently by granites. In the diorites the grain is, as a rule, smaller than in granites. The constituent minerals of a typical granite are quartz, felspar and mica; hornblende and pyroxene may also be present. Quartz is much harder and less prone to chemical decomposition than the other minerals mentioned. Although these differential qualities might affect the value of crushed granite as a concrete-making material, little difference has been noticed in the results yielded by granite and diorite, which is largely composed of felspar and hornblende or pyroxene.

With regard to hypabyssal rocks, many of the "traps" and "whin-stones" are finely granular in texture. Another structure frequently shown by this group of rocks is that known as ophitic; this structure leads to density, sharpness and cleanness of fracture, and strength in concrete-making aggregate. Felsite is worked in N. Wales, Cornwall and other districts for road material; it is usually very fine-grained and compact, and would doubtless prove a satisfactory aggregate for concrete.

The fracture of vesicular lavas (pumice, &c.) is irregular, and the voids are great.

Apart from quartzite and crystalline limestones, it does not appear that rocks of metamorphic origin have been extensively used in concrete work. The tendency to splitting and spalling renders them of less value for concrete than sedimentary and igneous rocks.

Sand may be regarded as an aggregate itself, or as a third constituent in concrete. In concrete-making, sand plays the part of a filling material, and tends to produce a smooth surface. To obtain a minimum of voids and a maximum of strength, the graduation of the sizes in the aggregate should be as perfect as possible; but any attempt to apply this proportional spacing of weights of aggregate over grade-sizes to sand would lead to the production of large quantities of dust during crushing. It is more advantageous to break and screen the aggregate down to the size of very coarse sand (say 20 mesh) and to fill in the smaller voids with coarse and medium sand (50 to 20 or 30 mesh). Fine sand has been found to weaken concretes. It is also desirable that sand used should not have all its grains of the same diameter. Sand composed of mixed grades contains fewer voids and reduces the quantity of cement required.

Neither the chemical nor the mineral constitution of sands concerns the concretor very closely, although he uses them on account of their quartz-content. It is only when they contain the clayey decomposition products of the felspars and certain of the heavy minerals that he raises objections. Neither chemical nor mineral analysis (for mineral analysis merely shows the manner of grouping of the chemical elements) is required to reveal this material if it is present in any quantity; mechanical analysis does so at once. By the mechanical analysis of sand or aggregate we seek to determine the sizes of the constituent particles or lumps, and the percentage of weight of each portion between certain agreed limits of size ("grades").

The grain size is undoubtedly the most important factor in concrete-making sands, and it is frequently specified that the sand shall not be less than 30-mesh. The so-called "Standard" sand for cement testing, road-metal abrasion, &c., is defined in Britain and the U.S.A. as a natural sand which passes a screen having 20 meshes to the linear inch (0.63 mm. diameter) and is retained on a screen having 30 meshes to the linear inch (0.42 mm. diameter).

The effective washing of sands and aggregate to be used for concrete-making is a matter of great importance. A perfect solution of the problem cannot yet be said to have been evolved. Some method of "scrubbing" is the only way to clean ballast effectively from adherent clay and loam. On the other hand, the dust produced in the crushing of aggregate can easily be washed away. If the aggregate is required down to 50-mesh, an upward current of water at ordinary temperatures of about 5 ft. per minute will remove all material smaller than this. If sand is to be added, and the aggregate is in consequence required to be not smaller than 20-mesh, a velocity of about 15 ft. per minute will remove the material not required. The objection to most sand-washers in use is that the water first washes the dirty sand, and then, before it leaves the apparatus, is filtered again by the clean sand; much of the clayey and vegetable matter thus remains in the sand. In the writer's experience, the most effective sand-washing plants at present in operation are Rikof's apparatus and the Dorr classifier.

*Abstract of paper read before the Concrete Institute.

Garden Cities and Health.

In giving evidence before the National Birth Rate Commission, last week, Prof. Leonard Hill expressed the opinion that garden cities should be built, instead of adding to existing towns, and new sites, with beautiful surroundings and with all the conditions that favoured a happy, healthy life, should be chosen. The only way to get better conditions was to go into the matter as thoroughly as we had gone into the war, and it was the one way to escape the perils of Bolshevism.

THE BUILDING TRADE CONFERENCE.

WE have received the following communication from Mr. J. E. Yerbury:—

SIR,—I was an interested listener at the conference held at the R.I.B.A., on May 20 last, and I should like to deal with some of the points raised.

Mr. A. A. Hudson, K.C., attached very much more importance to the influence of the Finance (1909–10) Act than, I think, was justified by the facts. I agree that, for a time, investors were influenced by the exaggerated condemnation of the Act and large numbers of property owners were led to doubt the value of their security and to refrain from further investments; then, again, as valuations came in, it was found that many mortgages had been effected on property which had depreciated in value, and others had been made on too high a valuation. These mortgages being called in, or reduced in amount, the mortgagors could not obtain the same terms again, and the Act was blamed for the loss to the mortgagors without being praised by the mortgagees for having secured their investment. Statistics do not prove that the Finance Act was responsible for the great decline in building. The increase in the number of houses year by year over previous years was as follows: 1905–1906, 113,000; 1906–'7, 80,000; 1907–'8, 80,000; 1908–'9, 72,000; 1909–'10, 88,000; 1910–'11, 11,000; 1911–'12, 80,000; and 1912–'13, 47,000. The great abnormal decline after the passing of the Act may have been due to unsettlement caused by the passing of the Act and active political propaganda, but the following year showed a great increase on 1910–'11, notwithstanding the Act being still in force.

The one great cause of decline, owing to the Finance Act, was the Lumsden judgment, which, admittedly, did not carry out the intention of Mr. Lloyd George or of Parliament. It is a good thing to have a trustworthy valuation of all land and I do not agree that it is impossible to obtain it, by employing local surveyors commissioned by Government for a particular purpose and not employed as civil servants. Under present conditions and, in fact, for many years before the Finance Act of 1910, it is—and was—impossible to build small houses at a profit; and it is a long while since speculating builders looked for a profit on bricks, mortar and labour—profit has had to be found in the improved ground rents to cover the loss on building.

Mr. Hudson seems to fear that by-laws are to be altered for State housing schemes, but not for the private builder; but I do not anticipate any such preference—alterations where made, will, I think, be to encourage private enterprise. Neither local authorities nor Government departments are anxious to build or to own house property at a time when everyone seems to think the State is fair game for robbery. Unless prevented, "no-rent strikes" will prevail at every public housing scheme when completed.

With some knowledge of the subject, I have no hesitation in saying that the contract system should be maintained and modified, and I am glad to find so high an authority as Mr. Hudson expressing his opinions strongly. Personally, I advocate that the quantity surveyor should price the bills and the tender nearest his price should be accepted, instead of the lowest.

Mr. Hudson is of opinion that insecurity in the ownership of land is the chief cause of the present inactivity in the building trade. With great deference to an opinion which must carry much weight with everyone interested in building, I do not agree. I am quite convinced that the chief cause is restriction of output; and I am further profoundly persuaded that a careful study of the Census of Production Report for 1907, published in 1913, will satisfy everyone concerned that I am right.

The point raised by Mr. Hudson in his letter to the *Times*, of March 31 last, that to take one-fifth of a man's profit will prevent speculation, is not, to my mind, quite sound. A speculator will invest if he anticipates a sufficient net profit to justify his investment; and in arriving at his anticipated profit, will take taxes into account and proceed with the purchase if four-fifths of the expected profit is sufficient inducement. For example, if I buy an estate of 100 acres, at £500 per acre, and roads and sewers cost me £150 per acre, my estate has cost me £650 per acre, or £65,000. I proceed to build 1,200 houses (twelve houses to the acre), which cost me £500 each, an expenditure of £600,000 in building, plus £65,000 for land and development—a total of £665,000. I sell the houses at cost (£500), plus ground rent of £8 per annum, or the ground rent at 20 years' purchase (5 per cent. investment)—freehold, £660—and so obtain £792,000 for expenditure of £665,000—profit, £127,000; £25,400 to the State and £101,600 for myself. If the estate is cleared in, say five years, and cost me, say, £11,600 in interest &c., I have a margin of £90,000 for five years work, and should not only be contented but quite pleased to have provided £25,000 to lessen the burden of the State. These are rough figures "to illustrate the argument," as the late Joseph Chamberlain would have said; taxes will not frighten business men if they know where they are and how much they are. The consumer—not the speculator—must pay.

I may say that, in my opinion, percentage on prime cost is altogether bad; where lump sum is impossible, contracts should be on schedule; and the effect of Government department's use of the percentage system has meant waste and delay. If the Government is to be responsible for building houses, my view is that a special housing department should be created, quite separate from every other department; and that it should act merely as a provider, employing independent architects and builders in each district, in exactly the same way as a private

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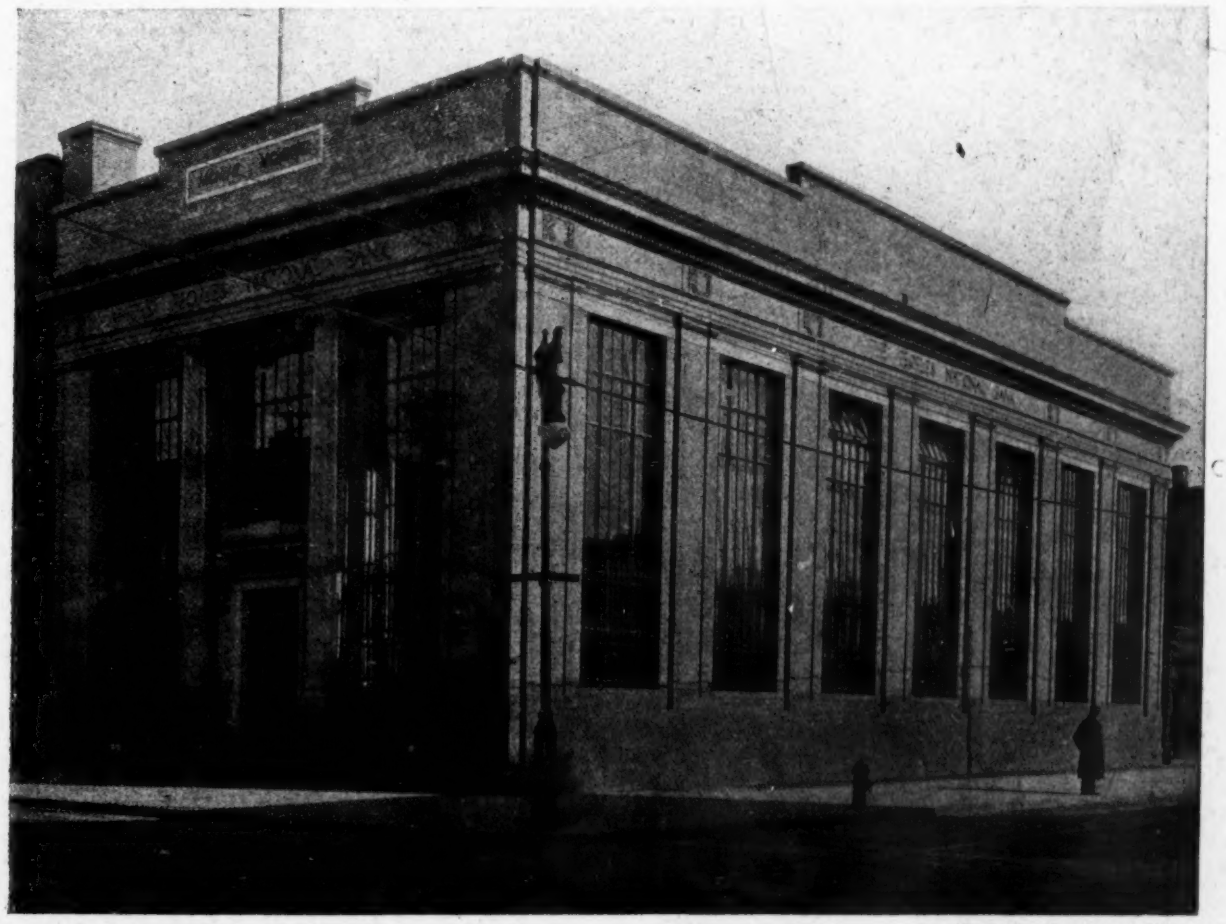


From the *American Architect*.

People's National Bank, Brooklyn, N.Y. MESSRS. KOCH & WAGNER, Architects.

individual who wished to spend large sums in building. The department would require a special staff of carefully-chosen men, and should not be drawn from the Civil Service except in special cases where previous experience justified the appointment.

No-rent strikes must be made illegal at any cost, if the State and local authorities are to become the landlords of the enormous number of houses required. It is a vital necessity that every temporary housing scheme should be used to its full capacity for such a period as the buildings can be decently occupied at a reasonable cost of maintenance. Hostels should be converted into cottages where possible and where needed, and so save the use of large quantities of building material and private housing accommodation at once, at about one-sixth the cost of new buildings.

It is common knowledge that in many industrial centres where the demand for housing is most acute, the Government has temporary buildings, which have been idle for months, and could be easily, cheaply and quickly converted into cottages, with all the accommodation necessary to satisfy hundreds of families clamouring for houses. By the suggested conversion, not only could accommodation be given quickly, but hundreds of thousands of pounds could be saved and very large quantities of building material could be used on other schemes which must go to these great industrial centres, if present buildings are not used. These temporary buildings are good for another ten years, and by their use enormous sums would be saved by putting off permanent schemes until normal times. How can one be patient?

If, instead of out-of-work doles, the Government had given an amount equal to the dole to every builder employing men on housing schemes, the building trade would be flourishing, and thousands of men would have retained their self-respect who have now lost it and the State would not have been swindled of millions. For example, 100 men may at present be drawing some £200 per week for loafing until they become too callous to wish for work; if this money had been given to builders, under proper safeguards, as State aid for building working-class dwellings, these men would have drawn, say, £400 per week in wages *for work done*; builders would have been busy and bought, say, £500 of building material, equal to another £250 in wages, and they would have provided, say, equal to two houses per week. Multiply this by thousands and note the loss to the country—in morale, in money, houses and contentment; 100,000 men might have been employed for the last thirteen weeks, 26,000 houses built and 26,000 families (say, 130,000 persons) housed—instead of hundreds of thousands of pounds being given to demoralise the people.

I do not share Major Barnes' doubts for the future, and feel quite satisfied that house building will become again a matter for private enterprise, and think that Government provision of houses at any but commercial rents is a mistake. A minimum wage should be fixed in every industry, which would necessarily take into account the item of rent; wages should be fixed in accordance with the standard of living demanded by the people of the country, and all industries which could not pay would die. I see no reason why rent should be partially borne by the State, or why State tenants or tenants of local authorities should be given an advantage over other ratepayers. But there is no possible shadow of doubt that, unless prevented by the Government in time, there will be "No-rent strikes" at every housing scheme in the country and the reductions given by weak authority will create further losses to the nation. To strike against payment of rent must be made illegal, or a handful of ignorant, conceited men will bring chaos everywhere. In many places the knowledge that such strikes have been more or less successful elsewhere is preventing any enthusiasm on the part of the ratepayers in pressing Housing Committees to push on with their schemes.

The question of wages is one which the employer and employee must work out with such assistance as others can give them. In your columns, Mr. Bartlett and Mr. Dove have discussed the question of profit sharing. I fail to see how a scheme could be worked which would or could apply to all men employed by a building firm which would, at the same time, be an inducement to the employee to take more interest in the work, although it would be possible for most of the well-known firms employing large numbers of men to initiate a profit-sharing scheme embracing all those in their regular employ, and a certain number of these partners could be sent to every job to set the pace.

I am strongly persuaded that, with the necessary modifications, the competitive-contract system will stand, and I do not see any difficulty in adjusting it to present difficulties, as has been done by Mr. Delissa Joseph, with whose remarks I find myself in entire agreement with regard to contract system—while I am absolutely opposed to the percentage-on-cost system.

I agree with Mr. Dove that the R.I.B.A. form of contract ought to have been scrapped long ago; and it is the means by which builders have been robbed of many thousands of pounds. I think Mr. Delissa Joseph's suggestion of adopting the *Builder* price list as a standard and adjusting contracts by his method, answers Mr. Hardcastle's question with regard to change in prices. I quite agree with him that the per cent. on prime cost contract has a very bad effect on the men employed, on managers and on foremen.

Mr. Waterhouse was, I think, right, when he said, "'prime cost,' which sounds so final is, in the realities of commerce, elastic"; and I think his conclusion is just "to clean and oil the present machinery and put it back for re-use," and in doing this I think the acceptance of the lowest tender should only be expected when, at the same time, it is the nearest to the surveyor's estimate.

Mr. Gill suggested in his paper that the architect might discuss with the workman, on the job, the "ins and outs" of the man's own particular trade. I do not think this would be either possible or profitable as a general practice, although done in special cases; I feel sure that the "correct attitude" described by Mr. Gill is the best. There are plenty of opportunities for architects to meet mechanics for discussion if they desire to do so—join a working-man's club, for instance.

I see no excuse for improving one's knowledge at some one else's expense, but I would like to see the R.I.B.A. a central meeting-house for architects, builders and operatives—a real builders' club, say, one night a week, until a club house is erected; for by social intercourse more is done than by sermons and lectures.

I find myself in agreement with Mr. Hill, and think conferences of architects, builders and operatives will eventually lead us into paths of prosperity; for the moment, what we want is constructive, not destructive, criticism.

If the Commitee or Council of representatives will study the Census of Production Report it will see that Mr. Hill is right when he says, "We must have a greater output"; there are many things which can be done to help, but unless in the end there is an enormous increase in output, all will be in vain. In 1907, the output for the building trade was £84 per person employed; in the wagon building shops, it was £123.

Mr. Murrey proposed a standard form of contract, with a joint board of control for contract works, to see that the standards having been fixed by agreement between employers and employed such standard conditions should be maintained. With this and with the spirit of all that Mr. Murrey said I agree, and I would suggest that, if by means of education we can bring the men to see that the belief that restricted output makes more work is false doctrine we shall arrive at the desired goal. As Mr. Murrey says, "This is a fallacy that can be dissolved, as soon as the fear of unemployment is eradicated from the operative's mind." It does not appear to me to be without the bounds of possibility to devise a scheme whereby every man in regular employment in the building trade might be guaranteed his wages during unemployment.

Every man is now entitled to his unemployment benefit or his sickness benefit, and most thrifty men belong to a sick fund and are in receipt of other benefits. Now would it not be possible to provide a fund out of profits which would give every unemployed man or sick man such a sum as would bring the most thrifty his full wages, and others a sum in proportion to the thrift practised? I think I would even go further and say that, once the building trade is brought together, it will be possible, not only to guarantee a man against unemployment, but also to provide a pension when he is past work.

To my mind, Mr. Murrey's paper was the most interesting and the spirit which animated all that he said was the right spirit, and it was good news to hear from the representative builders who read papers and spoke during the afternoon that they felt that an understanding was nearer at the present time than ever before.

A Joint Board is set up as an outcome of the Conference; let us hope it will not be allowed to die and that the R.I.B.A. will play its part. I would like to suggest to the Joint Board that it should collect all the information possible on those causes which more or less indirectly have effect on the position of the worker; and to this end any member of either section represented on the Joint Board should inform his representative on the Board of papers read before learned societies, or books published, which in any way may inform the minds of those on the Joint Board.

One of the operatives' representatives stated that the "ca' canny" movement was a result of the Government's mismanagement during the war, but the decline in the building trade dates back long before the war, as will be recognised when the Census of Production Report is examined, as it should be, by the Joint Board.

From 1886 to 1896, increase in wages, 18 per cent.; 1896 to 1914, 25 per cent.; and 1914 to 1919, 50 per cent.; whereas output decreased over each period, until at the present moment it is at least 50 per cent. below a fair standard of work. The numbers employed in the building trade should (before the war) show a normal increase of about 200,000 year by year; as a matter of fact, the numbers decreased by 100,000 in 1914. That is, 300,000 fewer people were employed at the beginning of 1914 than the normal growth with population. If the Joint Board can devise a means by which men employed in the building trade are informed of the facts, everything may be achieved; and I would suggest a propaganda—a crusade—in every part of the country to set out the real condition of affairs.

Royal Institute of Architects of Ireland.

At a meeting of the Royal Institute of Architects of Ireland, a communication was received from the Dublin Building Trades Employers' Federation, enclosing a resolution noting with satisfaction the instructions of the Local Government Board that housing schemes should be prepared by competent architects, and trusting, in view of the importance to the country that these projects should be adequately planned and supervised, that the effect of the instructions would be incorporated in the Housing Bill now before Parliament.

A report from a sub-committee on the standard size of brick was adopted.

The Council sanctioned the offer of the Institute prize of ten guineas for competition amongst the members of the Architectural Association of Ireland, and requested Mr. E. Bradbury to draw up the conditions. Numerous applications for membership under the revised by-laws were considered.

HOUSING AND TOWN-PLANNING NOTES.

Shrewsbury.

It is hoped that some of the houses in connection with the Shrewsbury housing scheme will be ready for occupation early next winter. The lay-out and house plans of two schemes have been passed by the L.G.B., and work on the roads and sewers is well advanced. The building of 370 houses on garden city lines is being considered, and plans have been prepared. The houses are to be of various types and designs, and provision has been made for gas cookers, gas boilers and baths. A firm of steam wagon builders is also inaugurating a public utility society, with the object of building 200 houses; at present, however, the scheme is held up owing to the high price of land.

Canada.

Twenty-three municipalities have applied to the Ontario Government for £1,400,000 in loans to build working-men's houses. The Government, under its housing scheme, is advancing the money at 5 per cent. interest. Returned soldiers can borrow the whole cost, up to £600, of a house which they are building for their own occupation.

Guildford.

The first sod in connection with the Guildford housing scheme was turned by Dr. Addison last week. He said that, as soon as possible, there should be a survey of the existing bad houses in the boroughs, and no housing scheme would be adequate which did not tackle the problem of insanitary houses.

Isle of Wight.

The Newport Corporation has decided to acquire five acres of land from Winchester College, at £300 per acre, as a start for its housing scheme.

St. Albans.

The question of the erection of twenty bungalows for disabled soldiers, as a war memorial, is being considered.

Hammersmith.

The Borough Council has decided to purchase the factory of Messrs. Blake's Explosive Loading Co., Ltd., subject to the approval of the Local Government Board, and to convert it for the purposes of housing accommodation. It is estimated that the annual loss will amount to £2,244, and application has been made for a loan of £13,000.

Surbiton.

The Urban District Council has adopted two sites for housing schemes, but at present the Local Government Board disapproves of both, one on the ground that it is too expensive and the other because it was the site of sewage works which were abandoned some years ago.

Hampton.

The Urban District Council has secured a site and is proceeding with the erection of 50 workmen's dwellings.

Wycombe.

The Corporation has applied for a loan of £33,110, for the purpose of building 56 workmen's houses, at a cost of £591 each.

Manchester.

The chairman of the Manchester Public Health Committee has estimated that, according to the procedure of the Local Government Board, it would take nine months from the initiation of a housing scheme to the stage of letting the contract for the erection of the houses. A deputation recently suggested to the Board that the provisional sanction of a building site and lay-out by the District Commissioner should be sufficient grounds for the local authority to proceed with other parts of a scheme, and it is believed that the suggestion was favourably received. It is estimated that 17,000 houses are required in Manchester, and if a little latitude is allowed as to dates, it is hoped that 10,000 can be built under the Government scheme. It is expected that the construction of 2,000 will have been begun within two months.

The Cost of Building.

In a speech at Cambridge last week Major Astor, Parliamentary Secretary to the Local Government Board, said that the Government expected the cost of building to reach its normal level in 1927, though this did not mean that pre-war prices would be in force again. For the present, rents for the new houses must be largely determined by existing rents, but after seven years local authorities would be expected to charge rents based on the then cost of building, which would be about 70 per cent. of the present cost. In 1927 the annual amount to be paid by the Government by way of subsidies would be settled, and the return to an economic rent would encourage private building.

Advisory Council on Housing.

The President of the Local Government Board has appointed an Advisory Council to advise and assist the Board in connection with the Government Housing Scheme. He hopes to make constant use of this Council in the consideration of many large questions which are arising, and to arrange that the Council shall be a nucleus from which sub-committees will be formed, with additional members, to consider detailed and technical questions. The Council will be under the chairmanship of Sir J. Tudor Walters, M.P., who was chairman of the Committee on Building Construction and is chairman of the Housing Group of the House of Commons, and the following are the other members of the Council:—

Mr. H. R. Aldridge, Secretary of the National Housing and Town-Planning Council.

Mr. Neville Chamberlain, M.P.

Mr. W. Dunn, F.R.I.B.A.

Sir Gilbert Garnsey, K.B.E., Financial Adviser to the Ministry of Munitions.

The Rt. Hon. Henry Hobhouse, Chairman of the Housing (Financial Assistance) Committee, appointed by the Minister of Reconstruction.

Mr. G. W. Humphreys, Chief Engineer to the L.C.C.

Mr. R. L. Reiss, Secretary of the Garden Cities and Town-Planning Association; Member of the Hobhouse Committee on Housing (Financial Assistance).

Mr. E. Selby, F.S.I.

Mr. E. J. Brown, Member of the Joint Industrial Council for the Building Trades.

Mr. R. Wilson, Secretary of the Amalgamated Slaters' and Tilers' Provident Society; Member of the Joint Industrial Council for the Building Trades.

Lady Emmott, Chairman of the Women's Housing Sub-Committee of the Advisory Council of the Ministry of Reconstruction.

Mrs. E. Barton, Member of the Women's Housing Sub-Committee.

Mrs. Sanderson Furniss, Member of the Women's Housing Sub-Committee; Member of the Executive Committee of the Garden City Association.

The following questions have already been under the consideration of Sub-Committees of the Council, under the chairmanship of the members named below:—

(1) Standardisation of materials and the use of new methods of construction. (Chairman: Mr. W. Dunn.)

(2) Revision of Forms of Contract. (Chairman: Mr. G. W. Humphreys).

(3) Revision of Forms of Specification and Schedules. (Chairman: Mr. E. Selby.)

(4) Financial Safeguards required in connection with Housing Schemes. (Chairman: Sir Gilbert Garnsey.)

WEEKLY HOUSING RETURN.

The weekly return of housing progress issued by the Local Government Board states that although a slight falling-off in the number of building schemes submitted to the Board occurred during the week ended June 7th, as compared with the previous week (which established a record), the number was higher than in any earlier week. The new schemes comprise a greater proportion of proposals from the remoter rural areas, which, speaking generally, have not been ready or able to respond as quickly as the urban areas to the demand for house building. One of the difficulties in these areas, as in some urban areas, is that with every cottage fully occupied no accommodation exists for contractors' men to use while building new houses. This need is being met in a number of cases by the use of Army huts acquired from the Government Surplus Property Disposal Board.

Interest in the promotion of public utility societies to take advantage of the State offer of financial assistance for approved building schemes promoted by such societies shows a steady increase. Many new societies are in the course of formation. The number of inquiries received by the Board to the end of last week was more than 300. The majority were from business firms and from private individuals—many of them working people—but, in addition, were inquiries from building societies and housing trusts, co-operative societies, trade unions, allotment associations and various charitable organisations.

Interest seems to have been evoked by the details published recently of a communal hot-water and electric lighting and cooking service which has been planned for the new garden-village scheme at Swanpool, Lincolnshire. The idea of using waste steam from a factory for the purpose of supplying a community with hot-water for house heating and for washing seems to have impressed the public imagination, and to have aroused a wish to ascertain how far this principle may be applicable generally to housing schemes in the neighbourhood of factories.

The provision of railway facilities for housing schemes, involving the setting up of new areas, is under consideration.

In the thirty-nine site-schemes approved during the week by the Board, the area involved is more than 1,000 acres, a greater area approved than in any previous week except that ending April 5.

The schemes submitted by local authorities during the week are as follows:—

Building Sites.

Schemes Submitted.—The number of schemes submitted (by 55 local authorities) was 212, bringing the total number of schemes to 2,068. In 1,841 of these the area is stated, and amounts to 21,778 acres. Particulars are as follows:—

URBAN.	ACRES.
Litherland	116.84
Bilston	100.95
Rothwell (3 sites)	81.10
Huddersfield C.B. (5 sites) ..	68.03
Halifax C.B. (8 sites) ..	59.85
Barry	47.00
Runcorn (4 sites)	39.03
Guildford B.	33.90
Southall Norwood	28.50
Merthyr Tydfil C.B. (4 sites)	22.51
Beddington and Wallington	22.50
Newbiggin-by-the-Sea ..	19.00
Houghton-le-Spring	17.00
Gosforth	14.28
Desborough	10.99
Colchester B.	10.47

Golborne, 9.50; Rugeley, 8.82; Newmarket 7.50; St. Alban's B., 7.40; Durham B., 5.92 Haverhill (2 sites), 5.55; Hartlepool B., 4.50 Halstead, 3.85; Perry Barr, 3.50; Bangor B. (2 sites), 3.15; Exeter C.B., 2.68. Malvern, 0.75; Margam (1 site).

RURAL.	ACRES.
Henley (28 sites)	38.09
Reigate (26 sites)	35.45
Atherstone	22.90
Keynsham (3 sites)	20.13
Kingswinford (3 sites) ..	20.00
St. Mellons	18.34
Hitchin (10 sites)	17.90
Amersham (8 sites)	15.08
Wortley	15.00
Orsett (2 sites)	11.15
Wallingford (5 sites) ..	10.00

Oxenden (9 sites), 9.61; Houghton-le-Spring, 9.00; East Stow (4 sites), 8.50; St. Faiths, 8.00; Luton. 7.60; Banbury (5 sites), 7.00; Bromsgrove (3 sites), 5.33; Thedwastre (5 sites), 5.00; Pontypool (2 sites), 4.00; Shepton Mallet, 2.00; Halstead, 1.00; Downham (16 sites); Hoo (16 sites); Depwade (8 sites); Braintree (1 site).

Schemes Approved.—Thirty-eight schemes, promoted by 26 local authorities, were approved. Altogether 579 schemes have now been approved, covering an area of rather more than 10,000 acres. The schemes newly approved are as follows:—

URBAN.	ACRES.
Leeds C.B.	179.26
Bolton C.B.	117.75
Brighton C.B.	94.00
Luton B. (4 sites)	89.27
Bedwellty	89.17
Consett	57.00
Abercarn	56.48
Bexley..	50.00
Halifax C.B. (6 sites) ..	47.97
Warwick B. (2 sites) ..	40.00
Southall Norwood	28.50
Rowley Regis..	27.25
Lowestoft B.	24.00
Sudbury B.	11.50
Desborough	10.99
Yeovil B.	10.75
Truro B.	10.25

Taunton B., 8.50; Newmarket, 7.50; Stratton and Bude, 5.50.

RURAL.	ACRES.
Wortley (3 sites)	59.10
Warmley	11.95

Cerne, 7.34; Shepton Mallet, 2.00; Eaton Socon, 1.66; Calne (2 sites), 0.75

Lay-Outs.

Schemes Submitted.—Fourteen local authorities submitted 27 lay-out schemes, bringing the total number of lay-out schemes submitted to 287. The 27 schemes are as follows:—

URBAN.—Alnwick. Chelmsford B., Colchester B., Exeter C.B., Godalming B., Great Yarmouth (2 schemes), Hartlepool B., Leeds C.B., Norwich C.B., Wallsend B., West Hartlepool C.B. (2 schemes).

RURAL.—East Stow (2 schemes), Hitchin (11 schemes), Luton.

Schemes Approved.—The following seven lay-out schemes were approved. The total number of schemes approved is 125.

URBAN.—Abercarn, Birkenhead C.B., Clay Cross, Hereford B., Manchester C.B., Sevenoaks, Sudbury P.

House Plans.

Schemes Submitted.—Sixteen schemes were submitted by eight local authorities. The sixteen schemes represent 670 houses. In all, 181 schemes have been submitted, representing 12,856 houses. The sixteen schemes are as follows:—

URBAN.	NO. OF HOUSES.
Hendon (2 schemes)	315
Manchester C.B.	138
Godalming B.	58
Ipswich C.B.	41
RURAL.	**NO. OF HOUSES.**
Luton	60
East Stow (4 schemes) ..	28
Thedwastre (5 schemes) ..	20
Banbury	10

Schemes Approved.—The following four schemes, representing 438 houses, were approved. The total number of schemes approved is 100, representing 5,009 houses.

URBAN.	NO. OF HOUSES.
Ealing B.	239
Birkenhead C.B. (2 schemes) ..	144
Clay Cross	55

Slough.

The Eton Rural District Council has agreed, at the request of the Local Government Board, to include 400 houses for the motor transport depot at Cippenham in its housing scheme, on condition that the Board gives preference to the erection of cottages in Eton rural area.

HOUSING EXHIBITION AT GLASGOW.

CONSIDERABLE progress is being made with the arrangements for the Housing and Health Exhibition, promoted by the Corporation of Glasgow, which is to be held in the Kelvin Hall of Industries, Glasgow, from October 8 to October 25. Accommodation for stands is being quickly taken up, and great interest is being taken in the enterprise by architects throughout the country. £6,000 is to be awarded in prizes for various competitions. A sum of £4,000 will be given for the most meritorious working plans, models, drawings and descriptions submitted for:—

(*a*) Housing proposals, suitable for the requirements of the industrial population within the City.

(*b*) The internal arrangements of fittings, equipments and furnishings proposed for such buildings.

(*c*) Proposal for renovation, reconstruction and/or removal of unsatisfactory or insanitary dwellings.

(*d*) A treatment of long lines of tenements in crowded streets, and providing open spaces for children's playgrounds.

(*e*) Suggestions for the provision of temporary housing accommodation during the period of renovation.

The remaining £2,000 will be expended in the preparation of the following aids to the thorough investigation of housing in the city:—

(*a*) Contour relief models of the whole city of Glasgow and surrounding area, showing the natural elevation of the surface of the ground on both sides of the River Clyde, wide streets and buildings marked thereon.

(*b*) Sectional contour relief models, of larger scale than the foregoing, of the different sections of the City, and particularly of the congested and slum areas.

(*c*) Large scale coloured contour maps of the City area, prepared from ordinary survey maps.

(*d*) Aerial photographs of the City, with the buildings therein as they are at present, and particularly of congested and slum areas.

All competitive exhibits, models, maps, drawings, plans, photographs, &c., will be on view at the exhibition.

It has been decided by the Committee of the Glasgow Town Council which is in charge of the arrangements, to invite representatives of all the local authorities throughout the country to the Exhibition.

New Issue.

The Maidenhead Brick & Tile Co., Ltd., which has been formed to acquire the brickworks at Pinkney's Green, near Maidenhead, from J. K. Cooper & Sons, Ltd., and to carry on and extend the business of brick and tile manufacturers and merchants, issued its prospectus on Monday last. The capital, of £75,000, is divided into 65,000 £1 ten per cent. participating preference shares and 200,000 ordinary shares of 1s. each, and 50,000 of the former and 200,000 of the latter were offered for subscription at par. The list is to remain open until to-day (Friday).

EXHIBITIONS OF THE WEEK.

Florentine Masters at the Burlington Fine Arts Club. Famous Paintings by Romney and Reynolds.

ONE of the most important and successful exhibitions ever organised by the Burlington Fine Arts Club—even surpassing in critical interest that of Old London, which awakened so much public interest last winter—is that of Florentine painting before 1500, which is now on view by invitation. It is difficult to underestimate the value of such exhibitions as this, even from a national point of view. Nothing is more dangerous, as well as more superficial, than the habit—to which we English are unfortunately prone—of judging everything by material results. This test cannot be applied to the higher things of life. It is too coarse, too crude, too brutally stupid, and, in this one instance, such an exhibition as this is far otherwise than the amusement of a few *dilettanti* in putting some good pictures together, but of very real national value as raising the standard of English criticism among nations to whom art has its own place in their life and consciousness.

To achieve this result the selection must be critically sound and the paintings shown of the first order; and this is here the case. We find here that wonderful Florentine school richly represented—entirely from paintings lent from Britain and Ireland—from Giotto the great initiator, through his immediate followers, such as Agnolo Gaddi, then Fra Lippo, Fra Angelico, and his pupilBenozzo Gozzoli, to that remarkable movement towards scientific expression in art, especially in anatomy and perspective, which found its utterance, after the first impulse given by Masaccio, in the work of Alessio Baldovinetti, the Pollajuoli, the painter called Pesellino, his contemporary Paolo Uccello, and his successor Piero di Cosimo.

It is the presence here of all these last-named—excepting only Piero Pollajuolo and Baldovinetti—in paintings of extraordinary originality and power, which gives this exhibition its very great critical value; notably is this the case with Pesellino, who appears in two paintings—the "Virgin and Child with Saints," lent by Sir George Holford, and the "Story of David" (in two companion panels), from the collection of Lady Wantage—which place this master in the very front rank of contemporary Florentine art. This is true—though perhaps to a less extent—also with Paolo Uccello in his marvellous "Hunt by Moonlight," and Piero di Cosimo, in the vivid imagination and almost murderous frenzy of his "Battle of the Centaurs and Lapithæ."

"The Coronation of the Virgin," by Lorenzo di Credi, lent also by Lady Wantage, belonged to the poet Samuel Rogers, who had bought it in Rome, and hung it at the foot of his bed, that on waking in the morning it might greet him with its tranquil beauty of the soul. In the Writing Room downstairs are some priceless Leonardo drawings lent by His Majesty the King, and the great cartoon of the "Virgin and Child with Saint Anne," lent by the Council of the Royal Academy.

At the National Gallery, in Room XXV, a new acquisition of importance is Romney's portrait group of the "Beaumont Family," which has been recently purchased by the Trustees. The famous portrait of "Mrs. Siddons as the Tragic Muse," from the Duke of Westminster's collection, is now very shortly coming forward for sale, and it is a matter of deep regret that England should risk losing this masterpiece. A letter written to *The Times* by Mr. R. C. Witt, on behalf of the National Art Collections Fund, records a negative decision, not only of that society, but also by the Trustees of the National Gallery; and Sir Claude Phillips, in commenting on the above, makes an eloquent appeal, which we heartily endorse, to some rich art-lover in our land to come to the assistance of the famous "tragedienne"—and of the nation.

REVERSION DUTY ASSESSMENT.

Unsuccessful Appeal.

Mr. JOHN D. WALLIS, as Referee under the Finance Act, 1910, has just issued his decision in an appeal by Earl Waldegrave against an assessment to reversion duty by the Commissioners of Inland Revenue, in respect of the determination of a lease of land and premises at Radstock, Somerset, occupied by the British Wagon Company. The case was heard at the Surveyors' Institution, Westminster, when Mr. William Allen was counsel for the appellant, and Mr. F. W. W. Kingdon appeared for the Commissioners. Sir Frederick Wills, architect and surveyor, of Bristol, gave evidence for the Commissioners.

The Referee, in his decision, states that by an agreement for a lease dated June 20th, 1876, the lessor agreed to grant a lease of a plot of land for a term of 50 years from Michaelmas, 1876, at a ground rent of £50 a year. The lessee was to erect thereon (prior to Michaelmas, 1877, and to keep in repair) in a good, substantial and workmanlike manner, suitable premises for engineering and wagon works. The lease was dated November 17th, 1877, and demised the land containing about one acre, with the engineering and wagon works, erections and buildings lately erected and built by the lessee, for the term of 50 years from September 29th, 1876, at a rent of £50 a year. The lessee was to completely finish where incomplete, in a good, substantial and workmanlike manner, the engineering and wagon works and other erections and buildings, and during the term to sufficiently repair and maintain and keep all the demised premises in good and substantial repair, and to insure against fire in the sum of £1,000. An agreement, dated June 22nd, 1876, provided for a right of way for a single line of rails as a railway communication between the lessor's private line and the new works, to enable trucks to be conveyed over the lessor's branch lines communicating with the Somerset and Dorset and Great Western lines. This agreement was terminable at any time on six months' notice, and the rent to be paid was five shillings a year. By an agreement dated June 17th, 1887, the lessor let to the lessee a plot of land on the west side of the works and containing one rood and two perches, at a rent of £5 a year, the tenant to give up possession at any time on receiving notice. On December 30th, 1910, the lease and the tenancy agreement were surrendered, to the intent that a new lease might be granted, and on December 31, 1910, the whole of the premises, including the land comprised in the lease of November 17, 1877, the right of way for railway communication, the land on the west side of the works, and a new railway connection, were together demised to the lessee for a term of 99 years from March 25, 1910, at a rent of £58 a year until September 29, 1926 (being the unexpired term of the original lease) and at a rent of £103 for the residue of the term of 99 years. The rent of £58 to be paid during the first sixteen years of the new lease was the sum of the aggregate rental paid under the surrendered lease and tenancy agreements, including a rent of £2 10s. for additional property. The result of the transaction was that the lessor received the same rent for sixteen years, and afterwards an increased rental of £45 a year. It was on this basis that the reversion duty was assessed by the Commissoners of Inland Revenue, the value of the benefit accruing to the lessor being fixed by them at £1,125, which was 25 years' purchase of the improved rental of £45 a year. The full duty at 10 per cent. was £112, and the reduced amount claimed on the determination of the lease before the expiration of the full term was £60 7s. 6d. The contention of the appellant was, in effect, that the increased rental obtained under the new lease was due to the inclusion of the railway connections, and that on the determination of the original lease, which did not include a railway connection, the total value was much below the sum at which it was assessed by the Commissioners. He (the Referee) had made an inspection of the premises, and found that the buildings, which were extensive, had been well and sufficiently maintained for the purpose of a wagon works. The value of the premises at the time of the original grant of the lease was also in dispute, but it was agreed that the rent of £50 a year should be valued at 25 years' purchase, and that the value of the buildings erected by the lessee in consideration of the lease should be taken at £1,000. The Referee states that he values the premises as works adjacent to a private railway but with no right of railway access beyond a connection subject to termination at six months' notice, and he finds that the value of the land was the same at the determination as at the grant of the lease, and that the value of the buildings at the determination of the lease was £1,120. He puts the total value at the determination of the lease at £2,370, and the total value at the grant of the lease at £1,337, the latter amount consisting of £1,250, being 25 years' purchase of the reserved rent of £50. and £87 in respect of payments made in consideration of the lease, being the value of the reversion at the end of 50 years to buildings erected by the lessee at a cost of £1,000. The Referee thus finds that the benefit accruing to the lessor by reason of the determination of the lease amounts to £1,033. The full duty is £103, and the amount payable on the determination of the lease before the expiration of the term for which the lease was granted is £55. The Referee, in conclusion, says :—" This decision being in substantial agreement with the amount of duty claimed, the costs of the respondents (the Commissioners of Inland Revenue) to be paid by the appellant."

LAND FOR RECREATION GROUND.

£7,700 Awarded in Claim for £15,000.

AT the Middlesex Guildhall, Westminster, recently Mr. Under-Sheriff Ruston and a jury sat to determine the amount which should be paid by the Wood Green Urban District Council on a claim by the London and Middlesex Freehold Estates Co., Ltd., in respect of the acquisition of 13¾ acres of land near to Albert-road, Wood Green, by the Urban Council for a recreation ground. The inquiry took place under the Lands Clauses Consolidation Act, 1845.

Mr. W. J. Disturnal, K.C., and Mr. W. J. Jeeves appeared for the claimants; while Mr. Walter C. Ryde, K.C., and Mr. E. M. Konstam, K.C., were counsel for the Urban Council.

In opening, Mr. Disturnal said the Council, having Parliamentary powers, served a notice to treat upon the claimants on November 29, 1913. For one reason and another, mainly through the war, proceedings had been delayed until now. The jury had to assess the value of the land at the date of the notice to treat, because it subsequently remained in the hands of the claimants without their having any power to do anything with it. Claimants some years ago acquired the whole of the property, which formerly belonged to the Alexandra Palace Company, for the purpose of development and building; and, of course, primarily, to make a profit out of the development. The property consisted of about 250 acres, and up to the time of the notice to treat they had sold lots to the extent of 144 acres. Of that quantity 17 acres 1 rood had been sold for £31,189; but in order to secure that price, the claimants had to incur an expenditure of £6,994 in road-making and sewers, and that left a net sum of £24,195, which equalled a rate of £1,400 per acre. Those were, however, really retail sales, and he did not suggest that the jury should assess a like value on this wholesale sale of nearly 14 acres. But he did suggest that the proper value of the land was £15,000.

Mr. P. M. Faraday, surveyor and valuer, Chancery-lane, said he agreed that one acre and a half were not fit for building purposes. He had valued the land according to two methods. In the first place, he had taken the actual price of sales at £1,400 per acre, and deducted 25 per cent., which left £1,050, to which he had added the customary 10 per cent. for compulsory sale, giving £1,155 per acre, or £15,880 for the whole. He had also valued it from the point of view of a building property, dividing it according to its respective values, having regard to its position. One area of 2½ acres, fronting Albert-road, he put at £1,500 per acre; 10 acres he valued at £1,000 per acre; while one acre and a quarter he put at nil, setting it off against the cost of a culvert and other things, though it might be used as a tennis court or some purpose in building development. He thus reached a value of £13,750, and adding £1,375 for compulsory purchase, arrived at £15,125.

Mr. Walter Ryde, for the Urban Council, said the jury had seen the land, and would have observed how part of it was badly scarrified on the site of brickfields or bri k-kilns. If the claimants had been left alone, they would have had to wait until they could find purchasers for all the land. They might have had to wait five or forty years. As regarded the sale of various plots, very little had been done since 1910.

Mr. J. Seagram Richardson, surveyor and valuer, Cheapside, E.C., said his experience was that since 1909–10, apart from one or two very exceptional cases, the demand for building land had come nearly to an end. He thought it was a fact that a few houses were added to the Alexandra Park Estate about 1908, 1909, and 1910. Regarding the land in question, it would be possible, with a great deal of expense, to build on part of the excavated portion, but no man knowing his business would do so. A man might get his money back, but he would get no profit. The outside value he would put on the land, taking the whole block, which he put at 13 acres, 3 roods, 26 poles, was £500 per acre, which was equal to a value of £6,956. He deducted £94 for the redemption of tithe, which brought the amount down to £6,862, and added 10 per cent. for compulsory sale, which gave a value of £7,548.

Sir Alexander Stenning, architect and surveyor, of Cannon-street, said he considered £400 an acre was good value for the land. For the 13¾ acres that amounted to £5,500. Adding 10 per cent. for the compulsory sale, his valuation amounted to £6,050. From what he could see, building in Albert-road stopped in 1902. The land they were considering that day was then open to be taken for building. It was a very difficult piece of ground to lay out; in fact, he doubted if anyone would attempt to lay it out for building.

The Under-Sheriff, in addressing the jury, suggested that the main consideration was the potentiality of the land as a building site.

The jury, after a short deliberation in private, awarded the claimants £7,700.

Commercial Carting Wages Order.

On January 30, 1919, an agreement was signed on behalf of the London Cartage and Haulage Contractors' Association and of the trade unions concerned, reducing the working hours of horse drivers, assistant horsekeepers, stablemen, vanguards, drivers and mates to 48 hours per week, exclusive of meal-times, and substituting for the shorter week the prescribed rates applicable to the longer week. The Minister of Labour has now extended the agreement so that the classes of men mentioned who are employed in the Administrative County of London and the boroughs of West and East Ham in the commercial carting industry shall be paid from June 16, 1919, rates not less than those set out in the agreement. This Order is binding upon all employers in the area employing the above classes of men in the industry which is concerned exclusively with carting, and operations incidental to it, and does not include carting, undertaken by an employer as incidental or auxiliary to any other trade or hindustry. Copies of the schedule of rates applicable can be obtained from the Ministry of Labour, Montagu House S.W. 1.

THE BUILDING TRADE.

BUILDING CONTRACTS: AN EXAMPLE—I

By James F. Butterworth.

The question of what form of contract will best meet the drastically altered conditions now ruling in the building trades is a burning one, as was exemplified at the recent conference of those interested, at the Royal Institute of British Architects.

That the competitive system was not considered satisfactory in many respects was evidently the consensus of opinion of the meeting, but as to what should replace it was left undecided. As things are in the melting-pot stage, I take it that practical suggestions will be welcomed, so that those most concerned may possibly evolve a new form or method that may be found acceptable to owners, architects or engineers and contractors alike.

In this connection, therefore, I submit that a system used by Frank B. Gilbreth, of Providence, R.I., in his contracting days, which proved itself of value and was largely made use of, gaining the confidence of his clients, is well worth full consideration.

Gilbreth contracted largely, and worked from New York and south of it to Canada in the north, and as far west as San Francisco, which he helped to rebuild after the earthquake. He frequently had as many as ten thousand men working for him at one time, and the handling of brick, concrete, and steel-work was child's play to him, whilst rapid and solid construction was his forte. He had practical experience of most forms of contracts, but after testing them, and particularly those on the "lump sum" and "percentage" basis, finally settled upon the fairest and most workable of all, and for the reasons I shall elaborate later on.

I will speak first of the well-known "lump sum" and "percentage" contracts, and then go fully into the merits of the "cost-plus-a-fixed-sum" system, and explain why Gilbreth finally concluded that it was the only just one, for it made the interests of the owner and contractor identical. I shall also try to prove that the desired result cannot be arrived at under the third, if a contractor accepts contracts, during the same period, under different bases. The "cost-plus-a-fixed-sum" belies its name unless the "cost" *is* the cost, the *whole* cost, and *nothing but* the cost, and further, unless the *whole* of the "fixed sum" is the actual net profit to the contractor. Let us examine the three forms, considering their merits and demerits from four view-points.

1. Lowest ultimate cost to the owner.
2. Greatest rapidity of construction.
3. Perfect production.
4. Further contracts between owner and contractor in view of past satisfactory results.

Under the "lump sum" bargain the contractor has to provide all labour and materials required to construct a definite job (plans, specifications and details have to be complete) for a fixed lump sum, or at unit prices, meaning several lump sums. At the first glance this may seem a reasonable and pacific form of contract, but it often turns out to be a delusion and a snare. (I am now treating of forms of contracts, not the probity of owners nor the rectitude of contractors.) The "lump sum" contracts often prove to be instruments to nurture lawyers and a franchise to pay court costs, and if an end were put to them, many lawyers might have to seek other spheres of activity. Scores know, to their sorrow, what happens under such forms of contract if an owner alters his ideas and the architect varies his plans. "Extra work" thus appears and it is probably what the contractor has been hoping for. After the owner has ordered "extra work," the real name of the contract becomes "The lump-sum-plus-extra-work - plus - time - extension - plus-lawyers'-bills contract." The owner and contractor are separated by a fence, and their interests are opposed to the end. Every penny the contractor can save is grist to his mill, and every fraction the owner pays does not of necessity mean he gets good value, for he may be paying not only for non-competitive rates for extra work, but losing interest on his investment, and probably loss of rent, because the job is not proceeding any faster than that rate of progress which nets the greatest gains for the pocket of the contractor. Further, a little time may be saved in the riveting of the steelwork; less cement may be used, or economies effected in mixing the concrete. Everything is up to specification, but these savings, if undesirable, or perfectly unoffending, are perquisites the contractor gains, and for which the owner disburses. It follows that the owner does *not* get the contract finished at the lowest cost, for he is bound to pay the lump sum agreed upon, providing the job is finished in such a manner that neither owner nor architect can refuse to pass it. Without discussing the question as to the legions of loopholes in this form of contract, let us consider what the owner pays under it. No contractor will work without profit, and he adds a stiff percentage to cover the risk of unforeseen circumstances, so that he may be reasonably sure of making his profit. Often the "unforeseen" does not happen, so that he gains everything so saved, thus clearing two profits. If fortunate circumstances prevail instead of anticipated unfortunate ones, he saves more money, and thus obtains three profits.

If "extra work" has been ordered, no owner can force a contractor to accede to the speed requirements nor the date of completion of the work fixed by the contract. I am told there are certain printed forms of contracts which are in request, containing a clause to the effect that there shall be a time extension *equal* to the delay caused by extra work, and this has brought much relief to many a hard-pressed contractor. I now come to the "percentage" contract, under which the contractor furnishes all labour and materials required at cost, plus an arranged percentage upon the cost. This form is practically perfection. The owner can control the speed and date of completion, and decide whether he will give way to a strike or substitute other labour. Owner and contractor have the same interests as far as speed and good workmanship are concerned, and continued pleasant relations should be assured, were it not that the owner may come to believe that the contractor is trying to increase the cost, so that his profit may be proportional to such increased cost. It was to prevent this disadvantage that "the contract-plus-a-fixed-sum" was introduced.

This latter form has all the utility of the "percentage" contract but without its drawbacks, for the incentive to the contractor to increase the cost so that it might add to his percentage profit ceases to exist. Some owners might consider it a disadvantage that they could not get their requirements completed at *less* than cost, as they sometimes do, if a contractor has blundered in his "lump sum" estimate, and no opportunity is given him to make it up on "extra work." This is the worst that can be alleged against it.

The advantages of this latter form of contract are many:—

1. The owner's and contractor's interests are made one.
2. The former knows the exact profit the contractor gets.
3. The owner's interests demand that the job be finished as soon as possible, and at the lowest possible cost consistent with thorough workmanship.
4. The contractor's profit or emolument being fixed, his only ambition is to complete the work in such a way that he retains the owner's patronage.
5. The owner need not fear "extra work," for it is done at cost. The contractor's profit is unaffected by any change in the plans, and the owner or architect can make alterations at any time without retarding the work.
6. The owner knows the cost of materials before their purchase, he gets all the cash discounts upon the same, or, if he wishes, he can purchase them himself, and decide whether bonuses shall be paid or not for quick delivery.
7. *The owner can have all excavations or foundations completed whilst the plans of the superstructure are being prepared.* Further, he may have any number of skilled mechanics he desires put upon his contract at short notice, and he, or his representative, can have access to everything connected with the work.
8. The advantages gained by the contractor are that he is given the opportunity to make a good name for himself—a valuable asset where future business is concerned—and his profit is assured. He will be independent of that class of owner who has not the courage to undertake fair and proper risks upon his own ventures, but prefers, under the "lump sum" basis, to try and impose them upon some unfortunate contractor, leaving him to fight his way through as best he may. It is also a satisfaction to a contractor to work for an owner who has no reason to doubt his honesty of dealing, for the latter has no fear of extortionate charges for "extra work," and further, has a contract that gives him full right of access to every detail of the financial side of the undertaking.

WORKMEN'S COMPENSATION.

The observations we recently published of "A London Builder," as regards the premiums paid for insurance under the Workmen's Compensation Act, have some bearing upon the point we raised in our issue for May 23, as to whether a system of insurance against accidents could not be substituted for the compensation now payable under the Acts.

We do not think all insurance companies adopt the system described by our correspondent of assessing the premium on the wages paid, as to our knowledge some companies adopt the system of charging a fixed premium on the number of employees likely to be employed, allowing an adjustment to be made at the end of each year according to the number actually employed.

If the practice described by our correspondent is general, in view of the rise in wages compared with the small increase in the amount payable in compensation, there would seem reason for a reduction in the premiums.

A committee has been appointed to investigate the working of the Workmen's Compensation Act, and to suggest improvements, and the terms of reference also include the question whether a system of insurance under State control or supervision is desirable.

Although we are not advocates as a rule of State control, we do think that some such system might, with advantage, be adopted to take the place of compensation under the existing Act, without increasing the charges at present incurred by employers, and with considerable benefit to the working classes, as at least some certainty could be assured to them, an element entirely absent in the compensation payable under the Act, where claims have to be distinguished on mere technical points.

At the present time contributory systems are not in favour with the employed, but if they could see their own interests we think it possible that with quite a small contribution on the part of the employees a really satisfactory and adequate system of insurance, would be found possible.

NOTES FROM THE FOREIGN PRESS.

These notes are taken from the Technical Supplement to the *Review of the Foreign Press*, issued by the General Staff, War Office.

MAGNESIA CEMENT.

Magnesite, when freed from carbonic dioxide, becomes magnesia, which, by means of a jet of water, can be changed into a translucent crystalline mass of the appearance of alabaster and harder than marble. It can also be burnt in rotary kilns into a cement which, when mixed with water, sets in about 12 hours as hard as Portland cement, and resists water equally well. It is used in Germany in the manufacture of firebricks and slabs for walls and floors, also in connection with expanded metal for small buildings, fences and similar structures.—*Beton u. Eisen*, April 4, 1919.

TARRED PAVING BRICKS FOR FACTORY FLOORS.

Apart from the cost of construction, the question of floor surface in a factory may be in some measure bound up with the quality of the produce. Wood flooring has become expensive. Moreover, wood is not now readily obtainable. Substitute material has had, therefore, to be sought after. One such substitute has, we are informed, been found in specially made bricks and tiles impregnated and coated with tar. A suitable material for the bricks is hard-burned clinker dried before being submitted to the process of impregnation. This process is most effectively carried out under pressure in a suitable containing vessel holding a large number of bricks. Where air-pressure of several atmospheres is not readily obtainable, it is sufficient to soak the bricks in a tar bath for at least 72 hours. A good mixture is 4 parts of creosote and 1 part of very fluid tar. Where the former material is not to hand, tar alone may be used. Experience has shown that low-burned bricks are in several respects inferior to hand-burned clinker bricks. These flooring bricks and tiles should be laid upon a bed of silicious sand, or, for cheapness, sifted ashes. When, however, a firmer and more lasting flooring is required, the bed may, as in the case of wood-paving, be of concrete. Good results have accrued from sifting hydraulic lime, 1 kilogram to the square metre of floor-space, over the floor and then flooding the surface with hot tar. The lime combines with the tar to make a continuous waterproof surface that is practically noiseless. Hard and unelastic articles, such as cast-iron parts of machines, dropped on to such a flooring are less likely to be broken than when allowed to fall on concrete. Another advantage is a hygienic one, namely, no appreciable amount of dust is generated to vitiate the atmosphere.—(*Zeitschrift fur angewandte Chemie*, February 18).

"LEAN" SYSTEM OF CONCRETE HOUSES.

A Swedish engineer, Mr. R. Lejmark, has introduced a system of building houses of perforated concrete blocks which are very light and strong, and yet good non-conductors.

Each block is 12 in. by 8 in. by 8 in. deep, with three 9 in. by 1½ in. wide perforations. The walls between the perforations are ¾ in., the outside walls 1 in. thick, with projections that fit into corresponding grooves on the next block, thus permitting both horizontal and vertical joints to be made tight. The three perforations form continuous channels through the whole height of the wall, but circulation of the enclosed air is restricted by the small volume and by breaking joints from course to course. Walls 8 in. thick have been found sufficient to resist the severity of a Swedish winter, and over 3,000 houses have been built on this system in Scandinavia. The concrete consists of one part cement, with four to five parts of sand, mixed at site in special portable machines weighing about 6 cwt., thus avoiding transport of the bricks.

The weight of such walls per rod of 272 sq. ft. is only five tons, viz., much less than brick walls of equal non-conducting qualities. The blocks lend themselves well to architectural designs, and various adaptations are illustrated.—*Beton u. Eisen*, April 4.

RATES OF WAGES IN THE BUILDING TRADE.

THE following are the present rates of wages in the Building Trade in the principal towns of England and Wales. It must be understood that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that may occur :—

	Masons.	Bricklayers.	Carpenters, Joiners.	Plasterers.	Slaters.	Plumbers.	Painters	Masons' Labourers.	Bricklayers' Labourers	Plasterers' Labourers.
Aberdare	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/3	1/3	1/3
Accrington	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½		1/3½-1/3½	
Altrincham	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½-1/4½	
Ashton-under-Lyne	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½-1/4½	
Barnsley	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/4½	1/4½	1/4½
Barrow-in-Furness	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½-1/4½	
Barry	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/3	1/3	1/3
Bath	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3½	1/2½	1/2½	1/2½
Bedford	1/1	1/2	1/2	1/1	1/1	10	10	10	10	10
Birkenhead	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½-1/4½	
Birmingham	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/6½	1/5½	1/5½	1/5½
Bishop Auckland	1/2½	1/2½	1/4	1/2½	1/7½	1/4½	11	11	11	11
Blackburn	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½		1/3½-1/3½	
Blackpool	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½		1/3½-1/3½	
Bolton	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½-1/4½	
Bournemouth	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3½	1/1½	1/1½	1/1½
Bradford	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/5½	1/5½	1/5½
Bridgwater	1/-	1/-	1/-	1/-	1/-	1/-	11	9½	9½	9½
Brighton	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/2½	1½-½	1/-½	1/-½
Bristol	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/7½	1/5½	1/5½	1/5½
Burnley	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½		1/3½-1/3½	
Burton-on-Trent	1/2	1/2	1/2	1/2	1/2	1/2	1/1½	11½	11½	11½
Bury	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½-1/4½	
Cambridge	1/2½	1/2½	1/2½	1/2½	1/2½	1/2½	1/1	11½	11½	11½
Cardiff	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/3	1/3	1/3
Chatham	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/2½	1/-½	1/-½	1/-½
Chelmsford	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3½	1/1½	1/1½	1/1½
Cheltenham	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/2½	1/2½	1/2½
Chester	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½		1/3½-1/3½	
Chesterfield	2/4	1/4½	1/4½	11	10	11	1/-	8-8½	8-8½	8-8½
Colchester	11	11½	11½	1/-	11	1/-	9½	8½	8½	8½
Coventry	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/5½	1/5½	1/5½
Crewe	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½		1/2½-1/2½	
Darlington	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/3½	1/3½	1/3½
Derby	1/4	1/4	1/4	1/4	1/4	1/4	1/3	1/1	1/1	1/1
Doncaster	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/4½	1/4½	1/4½
Dudley	1/6½	1/6½	1/6½	1/6½	1/6½	1/3	1/1	1/3½	1/3½	1/3½
Durham	1/2	1/2	1/1½	1/2	1/1½	1/10	1/0½	9	9	9
East Glam. and Mon. Valleys	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/3	1/3	1/3
Exeter	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1/1	1/1	1/1
Folkestone	1/-	1/-	1/-	1/-	1/-	1/-	10	9	9	9
Gloucester	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/3½	1/3½	1/3½
Grantham	1/3½	1/3½	1/3½	1/3½	1/3½	1/1½	11½-1/-½	11½	11½	11½
Grays	—	1/-	1/-	—	—	1/-	10½	—	10	10
Grimsby	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/5½	1/5½	1/5½
Great Yarmouth	10	10	10	10	10	10	8½	7	7	7
Guildford	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/2½	1/-½	1/-½	1/-½
Halifax	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/5½	1/5½	1/5½
Harrogate	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/4½	1/4½	1/4½
Hartlepools	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/7½	1/4½	1/4½	1/4½
Hastings	1/2½	1/2½	1/2½	1/2½	1/2½	1/2½	1/1½	11½	11½	11½
Hereford	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3½	1/2½	1/2½	1/2½
Huddersfield	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/5½	1/5½	1/5½
Hull	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/5½	1/5½	1/5½
Ipswich	1/3½§	1/3½§	1/3½§	1/4½	1/4½	1/4½§	1/2½	1/1½	1/1½	1/1½
Lancaster	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½		1/3½-1/3½	
Leamington Spa	11½	1/1½	1/1½	11½	11½	1/1½	1/0½	10½	10½	10½
Leeds	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/5½	1/5½	1/5½
Leicester	1/4	1/4	1/4	1/4	1/4	1/4	1/2	1/1½	1/1½	1/2
Lincoln	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3	10½	10	10½
Liverpool	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½-1/4½	
Llanelly	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/3	1/3	1/3
London	1/9½	1/9½	1/9½	1/9½	—	1/9½§	1/8½	1/5½	1/5½	1/5½
Loughborough	1/5½	1/3½§	1/3½§	1/3½§	1/3½§	1/3½§	1/2½§	1/1½	1/1½	1/1½
Luton	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/3½§	1/2½	1/2½	1/2½
Maidstone	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/2½	1/-½	1/-½	1/-½
Manchester	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½-1/4½	
Mansfield	1/3	1/3	1/3	2/3	1/3	1/3	1/2	1/0½	1/0½	1/1
Merthyr Tydfil	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/3	1/3	1/3
Middlesbrough	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/7½	1/4½	1/4½	1/4½
Newcastle-on-Tyne	1/8½	1/8½	1/8½	1/8½	1/7½	1/6½	1/4½	1/4½	1/4½	1/4½
Newport, Mon.	1/6	1/6	1/6	1/6	1/3	1/6	1/6	1/3	1/3	1/3
Northampton	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1/0½	1/0½	1/0½
Norwich	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1/0½	1/0½	1/0½
Nottingham	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/7½	1/5½	1/5½	1/6½
Oldham	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½-1/4½	
Oxford	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/4½	1/2½	1/2½	1/2½
Plymouth	1/4	1/4	1/4	1/4	1/4	1/4	1/1½*	1/-	1/-	1/-
Pontypridd	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/3	1/3	1/3
Portsmouth	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3½	1/1½	1/1½	1/1½
Preston	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½		1/3½-1/3½	
Reading	1/7½	1/6½	1/6½	1/6½§	1/7½	1/6½	1/4½§	1/3½	1/3½	1/3½
Rochdale	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½-1/4½	
Rochester	10½‡‡	11‡‡	11‡‡	11‡‡	11‡‡	11‡‡	9½‡‡	8‡‡	8‡‡	8‡‡
Rugby	1/1½	1/1½	1/1½	1/1½	1/1½	1/1½	1/0½	10½	10½	11½
St. Albans	1/4	1/4	1/6½	1/4	1/4	1/4-1/5	1/1½	1/-	1/-	1/0½
St. Helen's	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½-1/4½	
Scarborough	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/4½	1/4½	1/4½
Sheffield	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/5½	1/5½	1/5½
Shrewsbury	1/3	1/3	1/3	1/3	1/3	1/2	1/-	1/-	11	1/-
Southampton	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3½	1/1½	1/1½	1/1½
Southend-on-Sea	10	10	10	10	Piecework	10	8	8	8	8
Southport	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½		1/3½-1/3½	
South Shields	1/8½	1/8½	1/8½	1/8½	1/7½	1/6½	1/2	1/4½	1/4½	1/4½
Stockport	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½-1/4½	
Stockton-on-Tees	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/7½	1/4½	1/4½	1/4½
Stoke-on-Trent	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2½	1/2½	1/2½
Stroud	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3½§	1/2½	1/2½	1/2½
Sunderland	1/7½	1/7½	1/7½	1/7½	1/7½	1/6½	1/4½	1/3½§	1/3½§	1/3½§
Swansea	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/3	1/3	1/3
Taunton	1/1½	1/1½	1/1½	1/1½	1/1½	1/1½	1/0½	11	11	11
Torquay	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/1½	1/1½	1/1½
Wakefield	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/4½	1/4½	1/4½
Walsall	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/2½	1/1	1/1	1/1½
Warrington	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½-1/4½	
West Bromwich	1/7½§	1/7½§	1/7½§	1/4	1/3½	1/7½§	1/5½§	1/4½§	1/4½§	1/5½
Wigan	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½		1/4½-1/4½	
Windsor	1/4	1/4	1/4	1/4	1/4	1/4	1/2½	1/0½	1/0½	1/0½
Wolverhampton	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/5½	1/4½	1/4½	1/4½
Worcester	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/2½	1/1½§	1/1½§	1/1½§
York	1/6½§	1/6½§	1/6½§	1/6½§	1/6½§	1/6½§	1/6½§	1/4½	1/4½	1/4½

The Masons' rate given is for bankers: fixers usually ½d. per hour extra. * War bonus of 2s. per week granted. † War bonus of 3s. per week granted. ‡ War bonus of 3s. 6d. per week granted. ‡‡ War bonus of 5s. per week granted. §War bonus of 7s. 6d. per week granted. § These rates include the 12½ per cent. bonus. (The above rates, unless otherwise shown, are exclusive of 12½ per cent. bonus.—ED.

THE SOUTH AMERICAN BUILDING TRADE

A special correspondent of the *Financial Times*, who has made a study of the building industry in South America, says that, owing to the frequency of earthquakes in Costa Rica, there is a big demand for reinforced-concrete construction in that country. As cement is admitted duty free, there should be a fair amount of business as soon as conditions become normal.

The Nicaraguan trade is not large, but a good deal of cement should be required as the mining industry develops. Strong efforts are being made to introduce reinforced-concrete construction on a more extended scale, owing to the prevalence of earthquakes.

In most parts of Latin-America the second floors of buildings are constructed of wooden beams sheathed with pitch-pine match-boarding, but this style is gradually going out of use and steel beams are now being used. These are filled with concrete, reinforced with diamond mesh expanded iron, and there is an increasing demand for this material. The plain roofs in such buildings are being made of slabs of reinforced concrete, mixed with patent integral waterproofing materials, or with two or three courses of rectangular or square brick.

There is little or no market for floor tiles, as all these are made in the country, but colouring materials were imported for mixing with sand and cement for facing work. While trade in colouring materials is not large, it is likely to grow, and manufacturers who can produce the desired quality of material at a moderate cost should find a ready market.

What is known as terrazzo work has been used in Venezuela for the past quarter of a century, and is still highly popular. The material, in the form of artificial granite, has been largely used for monumental and building purposes.

There is a ready market for a good insect-proof and weather-proof flooring material, but the difficulty has been to find something which is of good appearance and will wear well, and yet be saleable at a low price. In the cheaper houses in Venezuela, cement floors are becoming the standard; these are either plain or ornamented with ceramic tiles, laid in patterns.

In practically all Latin-American countries glazed tiles made in Europe have been used for the window-sills of balcony windows. There were regular importations of ceramic floor and glazed side wall tiles, and a fairly big trade was done in Venezuela. The materials are used in all bath rooms, and a favourite size before the war was 8 ins. by 8 ins. The United States exports large quantities of these tiles to Venezuela in two qualities, both of which sell readily. A large number of buildings are roofed with clay tiles made locally, but for pitched roofs in the better class of Government and other buildings cement tiles of the German Köhler make laid on heavy furring strips, were being used. As it may be possible for some British manufacturer to supply similar tiles, the exact measurements may be given: they are, 500 mm. by 394 mm. by 10 mm. In a square metre 11 1-3 tiles are used, or an average of 1.05 tiles, per square foot. In addition, half tiles, special valley shapes and capping are made for starting and finishing the roofs. Where the areas are large, and light from the roof is required, the setiles are replaced by tiles of similar size and shape made from thick and transparent glass. Asbestos shingles made in Italy from Portland cement and asbestos, in accordance with certain Austrian patents, have been used to a limited extent in Venezuela, and a "vulcanised roof cement," which is a special waterproof roofing, has been used in Caracas by a German contractor. Slate roofs are never used in Venezuela. Composition roofs have not been used to any extent in Colombia, neither has any slate been made use of in that country for sanitary or roofing work.

In Colombia, a certain amount of artificial stone has been used for cornices, balustrades and small ornamental work outside buildings, and there is a moderate demand for this material at both Medellin and Barranquilla. This is made of a mixture of fine sand and high-grade imported cement. Dealers in fire bricks may be interested to know that there is a flourishing industry in the manufacture of refractories at Bogata, and also at Caldas, Antioquia. The latter plant ships a large percentage of its production. There is a small demand for plaster of paris, which is practically filled from United States sources. There is a suggestion that the local manufacture of this should be developed, as a good quality of gypsum is found in Columbia. The demand for glazed tiles in this country is not so large as it is in Venezuela, but cement tiles of French pattern, moulded, were coming largely into use in Barranquilla before the war. The asbestos shingles mentioned above are also in some little demand here.

Before the war, 34 to 36 per cent. of the imports of cement into Venezuela came from the United States, about 34 per cent. from the United Kingdom and from 21 to 29 per cent. from Germany. Columbia, before the war, imported about 4,000 tons, principally from Germany, Belgium and the United States; the American cement being preferred, owing to the lower freights and greater import facilities. In Panama, 60 per cent. of the imported cement came from the United States, 30 per cent. from Belgium, 5 per cent. from Great Britain and 5 per cent. from Germany. Just before the war, the American supplies were decreasing, owing to some dissatisfaction with the quality, and the German supplies were increasing.

There was very little enterprise shown by British firms, and it was generally complained that although the quality of the British product was high, the price was out of proportion. The price of the cement sent in from this country was about 10 per cent. above that of the German product. Belgium was at that time endeavouring to recover its position by offering cement at a lower price than the American suppliers. A point which is of some interest is that in Panama, for climatic reasons, it is necessary either to empty the bags as soon as received and store the contents in weather-proof structures or to use it at once. It would seem as though something might be done to remedy this drawback, and so increase the imports, if some method of waterproofing the bags could be devised at low price.

FIRE INSURANCE AND EXPLOSION.

WE may direct our readers' attention to one point in connection with insurance which was raised in the recent case Hooley Hill Rubber Co. *v.* Royal Insurance Co., Ltd., and Others (*The Times*, May 8). The premises insured were used for the manufacture of the explosive T.N.T., and the policy excepted damage by explosion or damage by fire following explosion. A fire had broken out on the premises and had done considerable damage before any explosion occurred, but later the T.N.T. exploded and caused much more extensive and serious damage.

In arbitration proceedings the damage done was distinguished, and the damage done by the fire was estimated at £12,740, and an award for this sum was made in favour of the insured, but the damage due to explosion was disallowed on the authority of the case Stanley *v.* Western Insurance Co. (L.R. 3 Ex 71).

A special case was stated for the opinion of the High Court, and the finding of the arbitrator on the above point was upheld, and this part of the case seems to call for no comment.

Another point, however, was raised as against the Royal Insurance Co., as it was alleged they were estopped from denying that they were liable, and the ground for this allegation seems to have been that in 1915, when the insurance was being arranged with the manager of a sub-branch of the insurance company, there had been some correspondence; first the assured had inquired whether the ordinary policy would cover damage caused by enemy bombs, and the manager of the sub-branch had replied referring to Clause 3 of the policy, which contained the exceptions; then the insured wrote inquiring what would be their position in case of an explosion followed by fire, and to this the agent had replied: "We have pleasure in advising that damage caused by an explosion resulting from fire would be duly covered by an ordinary fire policy, with the qualification, of course, that loss or damage as specified in the third condition of our policies would still be excepted." According to the report, it appears that this was not a reply to the question asked, as the question as reported was what was the effect of the policy if an explosion were followed by fire (and this was clearly excepted in the terms of the policy), but this point is not material to the decision, which was that the arbitrator was right in holding that the company was not estopped because in his letter the agent was not stating a positive fact, but merely expressing an opinion on the construction of a clause, to which he also directed the attention of the insured.

We draw attention to the case because difficulties often occur from parties not considering the conditions in insurance policies, but accepting the statements of insurance agents. Such statements may be perfectly *bona fide* and be made with the best intentions, but even if they go to the root of the matter litigation is often caused by an attempt to explain away the effect of a written document. The only safe course to adopt is to see that the intentions of the parties are expressed in the policies themselves.

DONCASTER BUILDING DEVELOPMENTS.

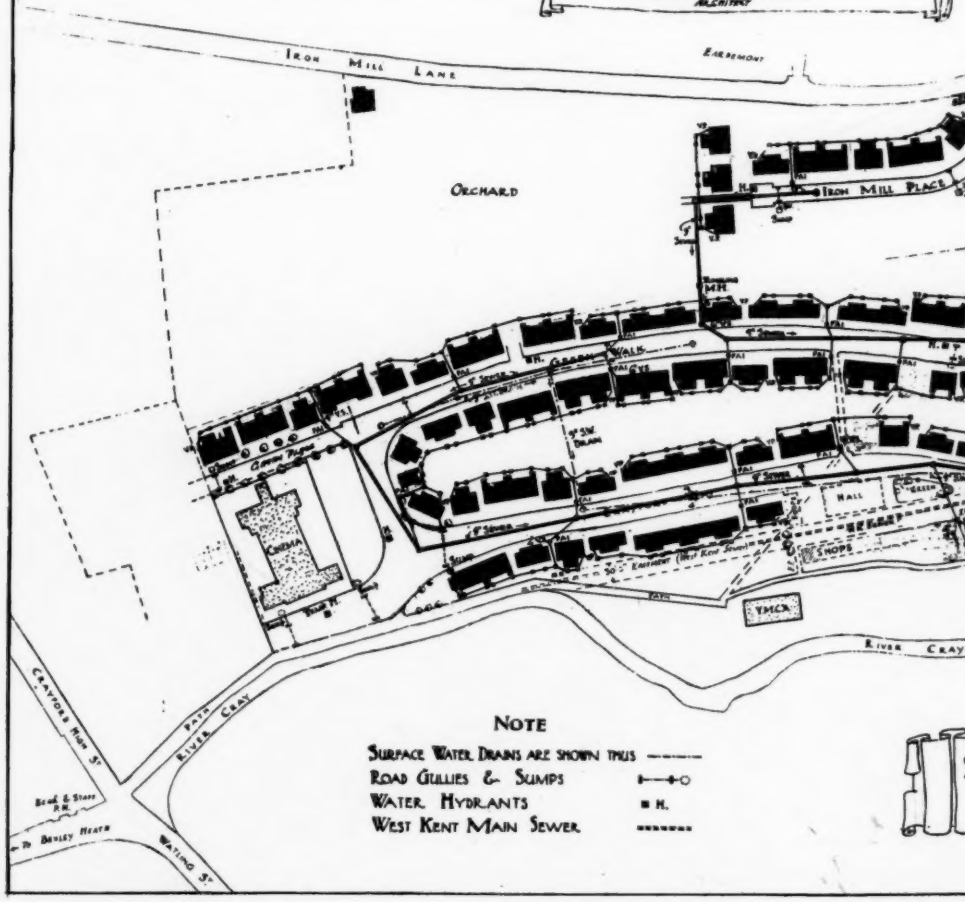
DONCASTER appears to be enjoying a big after-the-war boom. Apart from the need of houses, there is a great demand for shops, warehouses and business premises of all descriptions, and property values have been inflated enormously of late.

The old Subscription Rooms, better known as the Doncaster Betting Rooms, situated in the heart of the town, were recently put up at public auction and withdrawn at £7,500. Now they have just been sold, privately, at a sum well above that figure, for the purposes of a cinema, departmental store, arcade, &c., other adjoining property having previously been acquired. A fine residence at the corner of Hallgate and Thorne Road has been purchased privately, and it is intended to build a cinema, restaurant, roof-garden, &c., upon the site, at a cost of between £20,000 and £25,000. The plans are in the hands of a Barnsley architect, a company is to be formed, and contracts will, in due course, be invited for the erection of the buildings.

Many new firms and new industries are being attracted to the town. As for housing accommodation, Doncaster is sadly in need of a Garden City or suburb, and the Wheatley Park estate would appear to be an ideal site for such a scheme. In the colliery districts a start is now being made. At Bentley, building operations are to commence immediately, and it is expected the Council will here employ direct labour and erect the houses itself. An assistant surveyor has been appointed to help forward the work. At Askern, a public utility society has been formed, under the name of "The Askern Garden City Association." The colliery company has the matter in hand, a contract has been placed for 350 houses, and it is proposed ultimately to erect between 600 and 700 houses at cost of approximately £300,000. At Thurnscoe and Bolton-on-Dearne, the housing problem is being spiritedly attacked, but meanwhile numerous other colliery centres in the Doncaster district, including Thorne, Hatfield, Carcroft, Rossington, Woodlands, Edlington, and half a dozen other places, can easily do with from 500 to 1,000 houses apiece, as a first instalment.

CRAYFORD VILLAGE EXTENSION *for the* CRAYFORD COTTAGE SOCIETY

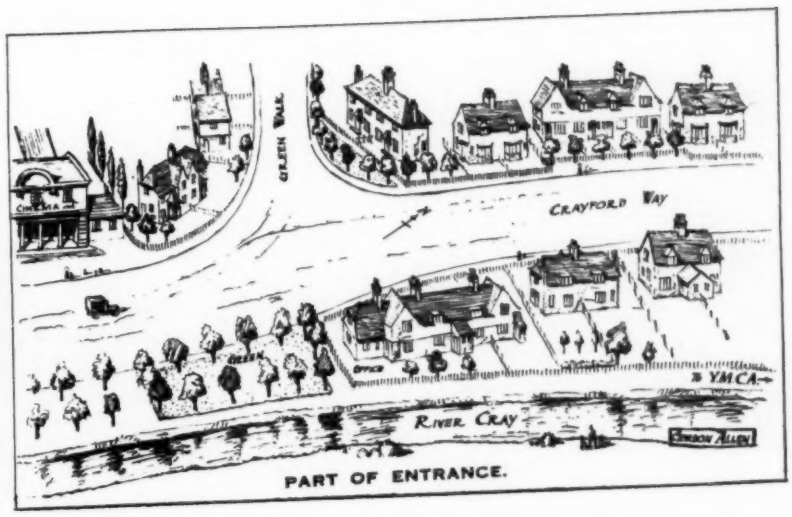
LAY-OUT BY THE
RURAL HOUSING ORGANISATION SOCIETY LTD
4 Tavistock Square, W.C.
embodied by
GORDON ALLEN FRIM
ARCHITECT

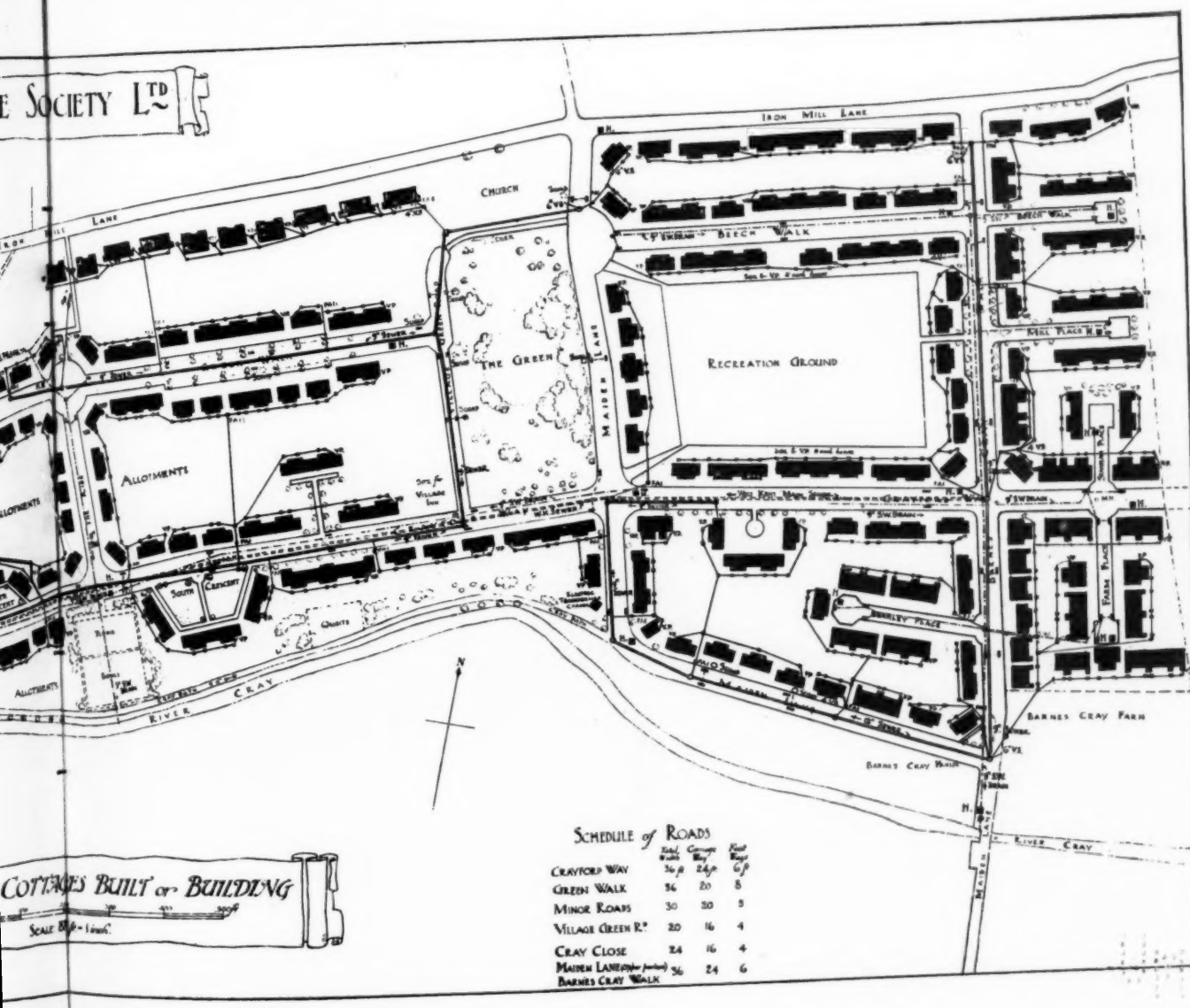


NOTE

SURFACE WATER DRAINS ARE SHOWN THUS ——
ROAD GULLIES & SUMPS ⊢—o
WATER HYDRANTS ■ H.
WEST KENT MAIN SEWER ▪▪▪▪▪▪▪

MR. GORDON ALLEN, F.R.

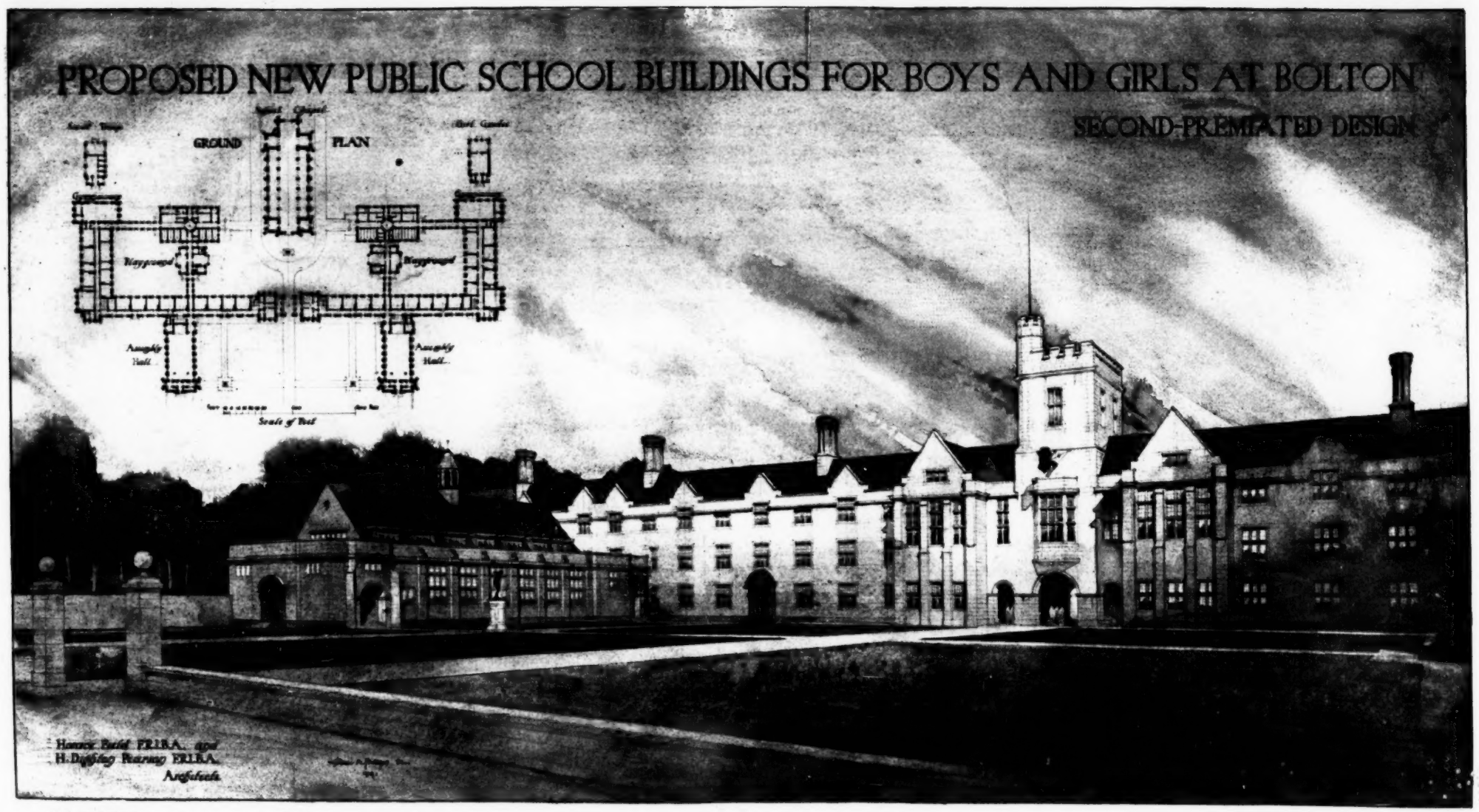




RDON ALLEN, F.R.I.B.A., ARCHITECT.

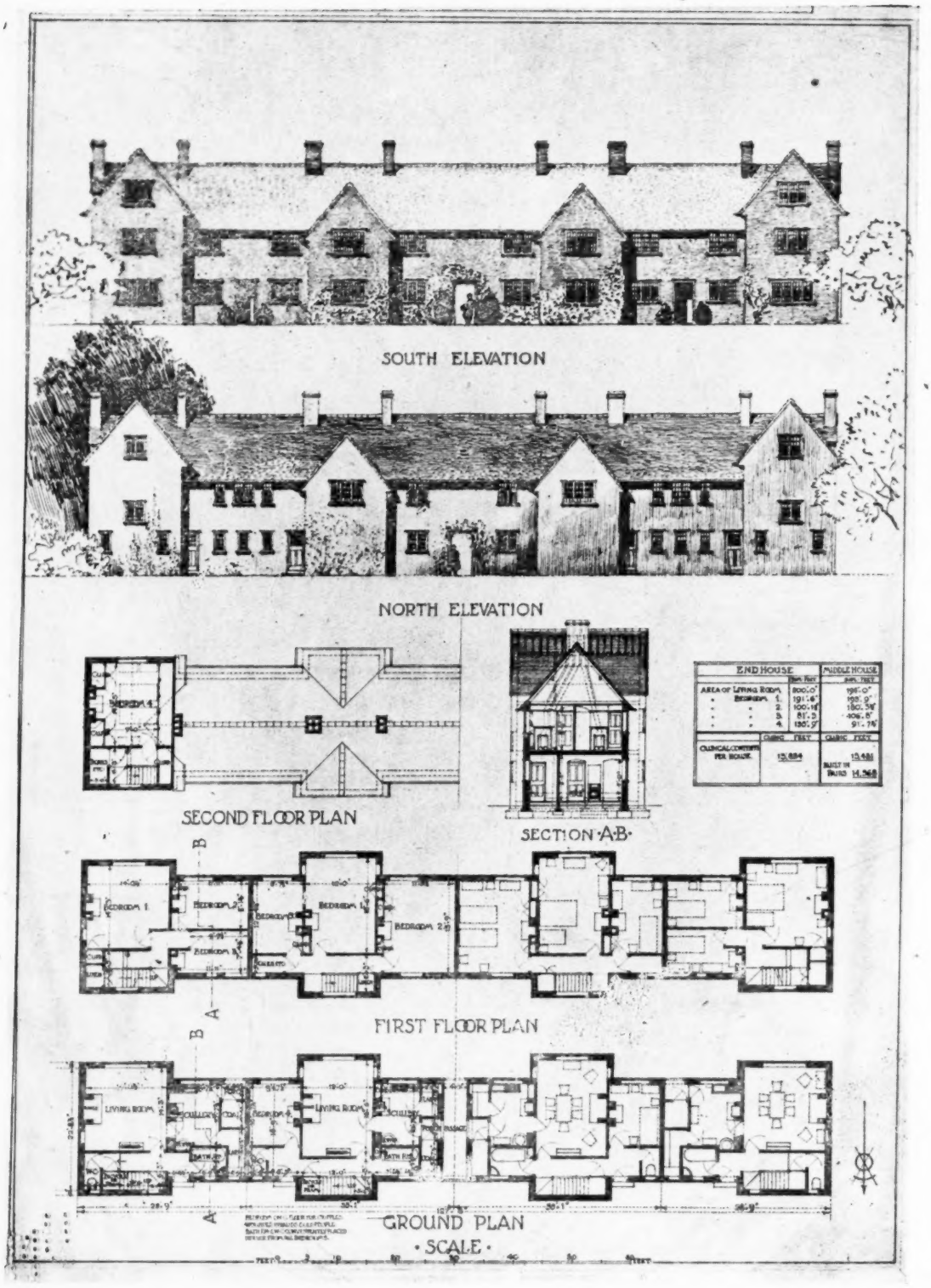
PROPOSED NEW PUBLIC SCHOOL BUILDINGS FOR BOYS AND GIRLS AT BOLTON

SECOND PREMIATED DESIGN



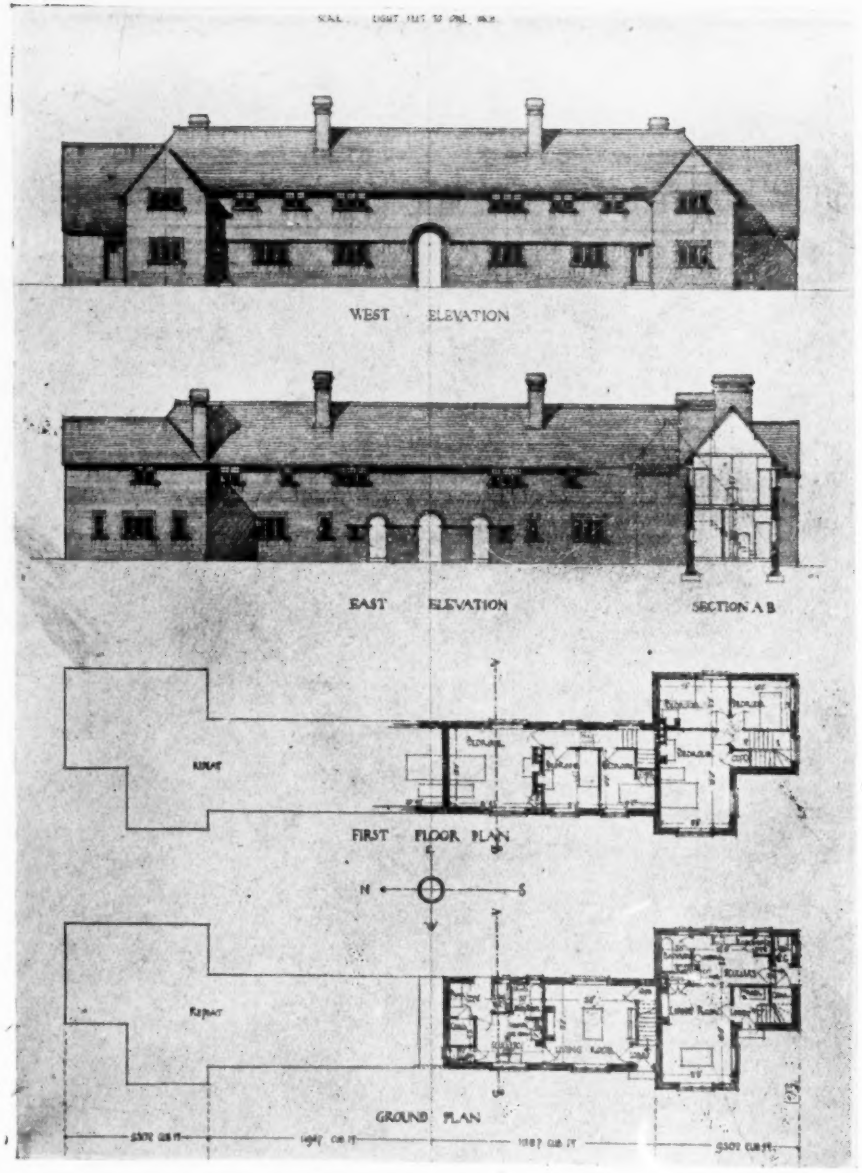
R.A. EXHIBITION.

MR. H. FIELD, F.R.I.B.A., AND MR. H. D. PEARSON, F.R.I.B.A., ARCHITECTS.

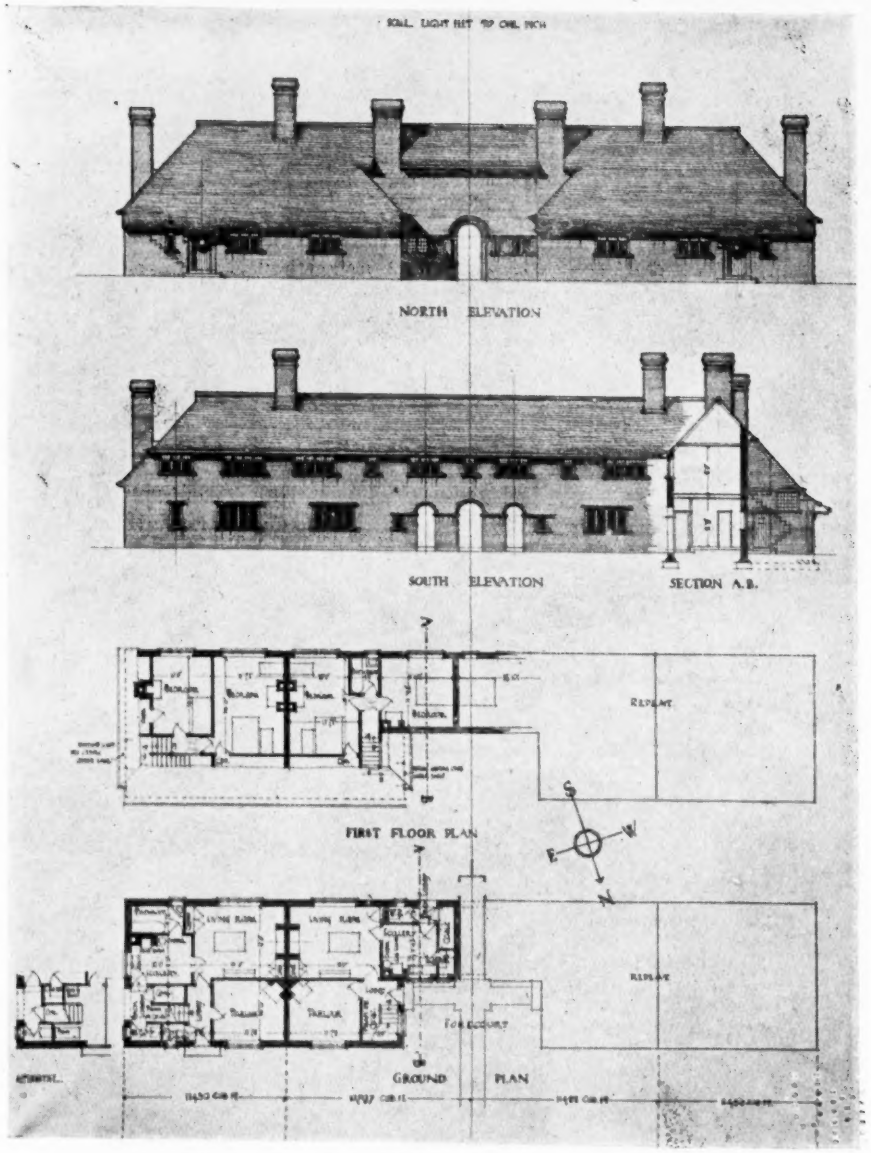


BRISTOL HOUSING COMPETITION: TYPE NO. 3.

PREMIATED DESIGN. BY MR. S. S. REAY, F.R.I.B.A.



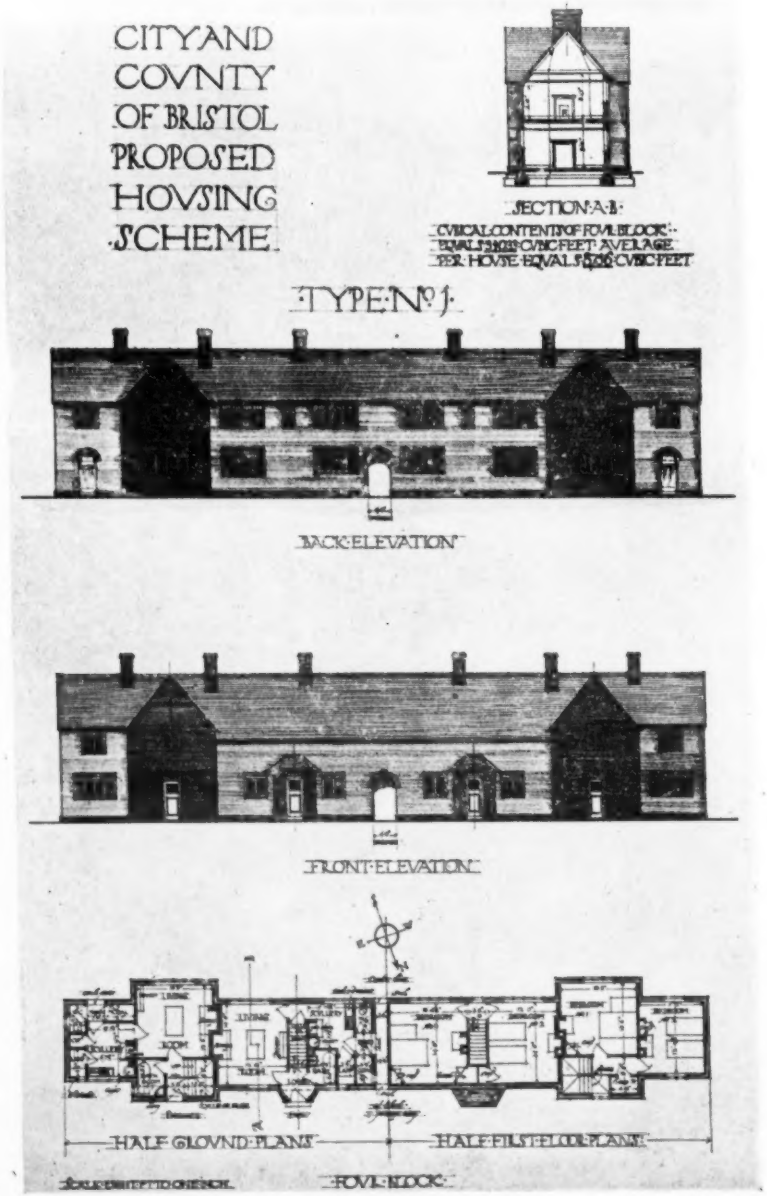
TYPE NO. 2.



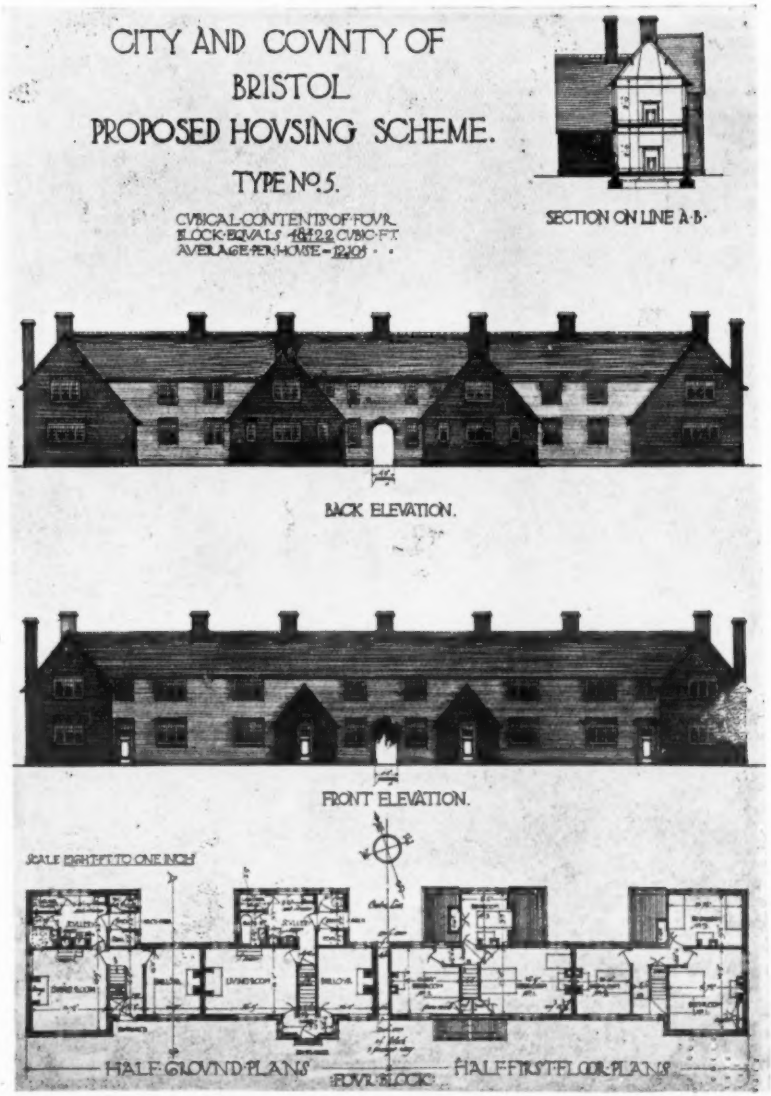
TYPE NO. 4.

BRISTOL HOUSING COMPETITION.

PREMIATED DESIGNS. BY MR. CYRIL A. FAREY.


CITY AND COUNTY OF BRISTOL PROPOSED HOUSING SCHEME.
SECTION A-B.
CUBICAL CONTENTS OF FOUR BLOCK EQUALS 21035 CUBIC FEET AVERAGE PER HOUSE EQUALS 5258 CUBIC FEET
TYPE No. 1.
BACK ELEVATION
FRONT ELEVATION
HALF GROUND PLANS
HALF FIRST FLOOR PLANS
FOUR BLOCK

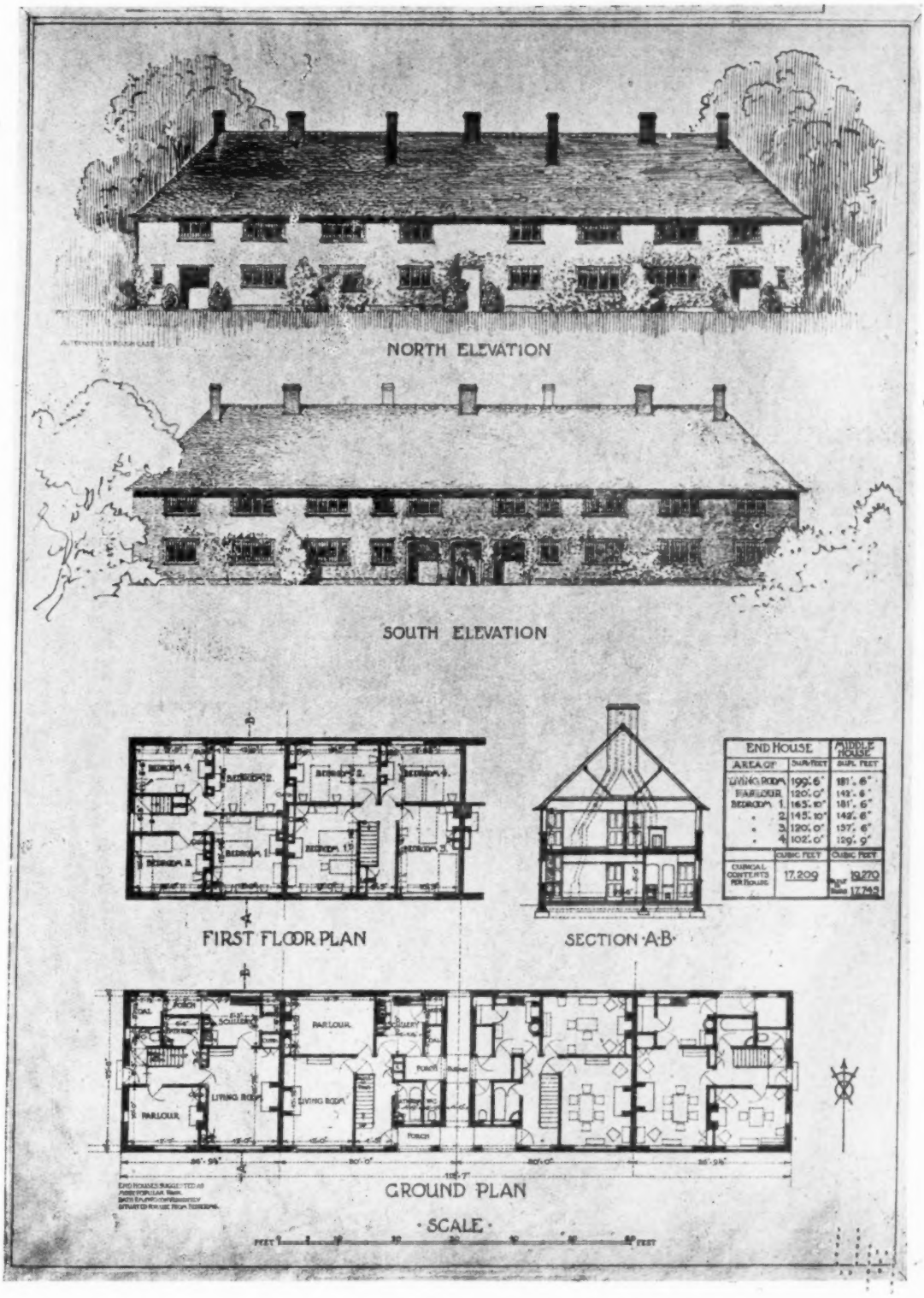
Type No. 1.


CITY AND COUNTY OF BRISTOL
PROPOSED HOUSING SCHEME.
TYPE No. 5.
CUBICAL CONTENTS OF FOUR BLOCK EQUALS 46122 CUBIC FT.
AVERAGE PER HOUSE = 12105
SECTION ON LINE A-B
BACK ELEVATION.
FRONT ELEVATION.
SCALE EIGHT FEET TO ONE INCH
HALF GROUND PLANS
FOUR BLOCK
HALF FIRST FLOOR PLANS

Type No. 5.

BRISTOL HOUSING COMPETITION.

Premiated Designs. By Mr. W. H. Watkins, F.R.I.B.A.



BRISTOL HOUSING COMPETITION : Type No. 6.

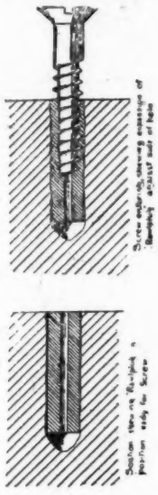
Premiated Design. By Mr. S. S. Reay, F.R.I.B.A.

THE VICTORY HALL, CORNER HOUSE, PORTSMOUTH.—MR. E. B. GLANFIELD, F.R.I.B.A., ARCHITECT.

R.A. EXHIBITION.

AN EFFICIENT PLUG.

ANYTHING which will tend to increase efficiency and reduce the cost of labour and materials is well worth while investigating. This certainly applies to the device which the Rawlplug Co., of Lenthall Place, South Kensington, have placed on the market. It is a patent plug consisting of a tube of stiffened fibres, which is used for fixing screws in plaster, brick, marble, metal, concrete, &c., and which the makers claim will save at least five-sixths of the time, labour and money required by the usual method of fixing screws into any substance but wood. To fix a screw, all that is required is to make a hole very slightly larger than the screw to be fixed, insert the plug and turn home the screw, which automatically expands the plug, thus holding the screw immovably in position. The patent plug, to which the name of "Rawlplug" is given, has the advantage that it is invisible when in position, as the head of the screw covers the plugged hole. By means of this plug a firm fixing can be obtained for pipes, wires, fittings, &c., without damage to the surrounding material. This is a great advantage



when fixing anything to old churches, monuments, or any place where it is essential that the material should not be damaged The makers claim that the "Rawlplug" is the only plug by which it is possible to obtain a firm fixing in plaster, and also a very firm hold can be obtained in any metal without the necessity of even threading a hole.

In practically every case the material into which it is fixed will give way before the screw is withdrawn, and it requires a direct pull of between half a ton and one ton to withdraw a medium sized screw from a hard substance. The cost of the plug, owing to its simplicity, is very moderate. The Rawlplug Co. invite inquiries for further particulars, and they will be pleased to give any further information to anyone interested. The device was recently explained to us and, on the face of it, we are satisfied that a really efficient plug has been found for fixing screws in concrete, brick, metal, plaster, marble, &c. Its efficiency appears to be equalled only by its simplicity, and we believe the device has only to be known to be generally used.

Brazilian Commercial Delegation.

The Brazilian Commercial Delegates, who are shortly to tour the commercial centres of Great Britain under the auspices of the Federation of British Industries, are expected to arrive in this country before the end of the present month. The delegates, after a few days' stay in London, will proceed to Birmingham, Glasgow, Edinburgh, Newcastle-on-Tyne, Darlington, Liverpool, Manchester, Sheffield, Leeds, Leicester, Bristol and Swansea, returning to London about the middle of August. Arrangements have been made for them to visit important works in the above-named cities.

IRON OR STEEL PIPES FOR HOUSE DRAINAGE.

IN order to decide on the merits of house drainage pipes of cast-iron, wrought-iron and steel and of their joints, &c., Eng. W. Paul Gerhard, of New York, collected material in seventy-eight of the principal buildings of Broadway, confining himself to buildings of six and more stories, and of more than five years of age, since more recent buildings would not afford much information as to corrosion. Thirteen of the buildings were over thirty years old, only six less than ten years. In the older buildings cast-iron predominated, in more recent buildings pipes of steel and wrought-iron of the screw-jointed type (not caulked). Particular attention was paid to the roof vent pipes, as they were likely to show the greatest natural corrosion; of the 1,076 vent pipes examined, one-third were cast-iron. The tests on which Gerhard relied in his distinction of steel and wrought-iron and as to other features were the following:—In the fracture test the pipe was hammered to the point of fracture; genuine wrought-iron should give a dull gray fibrous fracture; steel an even, bright, crystalline fracture; the zone of galvanised steel peels off in scales under the hammer, whilst it should stick to wrought-iron without cracking. In the threading test a thread was cut in the pipe; a wrought-iron pipe should give crumbling chips, steel a long spiral. Owing to corrosion, wrought-iron becomes pitted and pock-marked; steel scaled off; cast-iron also cut uniformly. In the acid test the specimens were cleaned of grease and scale and then placed for fifteen or twenty minutes in a cold mixture of water, sulphuric acid and hydrochloric acid in ratio 9 : 3 : 1; the fibrous structure of wrought-iron then should come out, whilst steel should dissolve uniformly. For the manganese test a chip was dissolved in warm picric acid, and to the cooled solution drops of sodium bismuthate were added until a brown precipitate appeared, the pinkish colour of the solution then indicated the presence of manganese which would be characteristic of a steel; wrought-iron should not give a pink solution as manganese is not used in its preparation. This test, Gerhard admits (*Journal of Franklin Institute*, January, 1919), may be misleading; his other tests might also be questioned, perhaps, but he submitted doubtful cases to further tests. Finally, he performed a microscopic test after etching the specimen with picric acid; wrought-iron would then show fibres of silicate slag, whilst steel would show pearlite in fairly even distribution. From his investigations he concluded that cast-iron is satisfactory from the corrosion point of view, but unsatisfactory with respect to the caulked joints, which are apt to turn leaky. Direct joints are superior, provided the pipe could be well screwed into the shoulder of the fitting; exposed portions of the thread should be protected against external corrosion. As regards steel and wrought-iron pipes, genuine wrought-iron appeared undoubtedly the more durable material.—*Engineering*.

British Fire Prevention Committee.

The following publications ("Red Books") of the British Fire Prevention Committee, relating to the fire-resistance of reinforced concrete, have now been released. Only a limited number are available for non-members, and may be obtained on written application to the Registrar of the Committee, at 8, Waterloo-place, S.W. 1:—

No. 207.—"The Fire Resistance of Reinforced Concrete as Demonstrated at the Edison Phonograph Works, New Jersey, U.S.A., during the Fire of December, 1914." (5s.)

No. 208.—"The Fire at the Millennium Mill, Victoria Docks, Silvertown, London, on January 19, 1917." By Ellis Marsland. (5s).

No. 214.—"Fire in a Reinforced-Concrete Warehouse at Far Rockaway, New York, U.S.A." By Ira H. Woolson. (2s. 6d.)

No. 225.—"The Fire at the Quaker Oats Company's Premises at Peterborough, Ontario, Canada, on December 11, 1916." Part I, by A. J. Mylrea, and Part II, by T. D. Mylrea. (4s.)

THE HEAT TREATMENT OF STEEL.

IN a paper, read before the Society of Engineers, Mr. C. O. Banister, F.I.C., said that the importance of the composition of metals and alloys used for engineering purposes had long been recognised, but the fact that correct heat treatment was equally important had only recently been fully realised. The temperature to which it was necessary to heat carbon steel for hardening depended on the amount of carbon present, and it was important that the temperature used was neither too high nor too low. The importance of correct temperature for quenching had not always been recognised, and early workers placed more value on the nature of the quenching media. Cold water was now almost universally used for the dead-hardening of steel.

The increase in hardness obtained was accomplished by an increase in tensile strength, and by a decrease in ductility and in capability of resisting shock, so that the material became relatively brittle and unsuitable for most industrial purposes.

Annealing was an operation used to increase the softness and ductility of the metal. The effects of annealing castings, forgings, cold worked and hardened steels were dealt with, and comparative results of hardening from 850 deg. C. and annealing at 850 deg. C. of steels containing varying amounts of carbon were given. Examples were given showing the effect of normalising, which may be considered as a modification of the annealing process.

The methods used in practice for obtaining hard or moderately hard steel with good wearing properties, combined with toughness, were considered. These consist of hardening in the usual way and then reheating to a moderate temperature, an operation known as tempering, or of heating and cooling at a slower rate than that used for dead-hardening, by the use of quenching media other than water, such as oil, compressed air, molten metals, &c.

In the discussion which followed, Mr. Burnard Geen suggested that the increase of volume of steel, due to quenching, would be accompanied by distortion, and that the annealing process would affect the actual strength of the steel by disturbing its structure.

Mr. Henry C. Adams said he was surprised at the author's description of the relative effects of annealing and normalising. He thought that normalising was more drastic in its effects. He gave an instance of steel being cracked long after passing inspection, and he thought that this would support Mr. Banister's statement that the contraction of steel, after quenching, sometimes ranged over several months.

Mr. A. Marshall Arter, remarking on the fact that rails treated by the Sandberg process had a Brinell hardness of about 20 per cent. greater than ordinarily, thought that a little common-sense was required when using the Brinell standard, on account of the difference in cases where air-hardening and case-hardening have been compared.

Mr. E. F. Etchells said it was apparent that the subject had been greatly neglected. He agreed that the Brinell standard must be dealt with in a very broad and common-sense manner, owing to the anomalies which it sometimes indicated.

Mr. C. O. Banister, in his reply, said that the effect of barometric pressure was so small that to-day it was neglected, but notice was taken of this years ago. He agreed that, by annealing, it is possible to affect the structure of the steel, due to hammering, after the oil had partially hardened the steel. He thought it was possible for rails to take up carbon from the blow-pipe flame. He also thought it possible the Brinell numbers would appear delusive at times. The air-hardened steel would be correct for probably the first inch, and quite unlike case-hardened or skin-hardened steels.

COMPETITIONS, CONTRACTS, &c.

For some contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this number. Contracts iv, vi; Competitions iv; Public Appointments l; Sales by Auction lv. Certain conditions beyond those given in the following information are imposed in some cases, such as that advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

BUILDING AND PAINTING.

JUNE 20.—**Cardiff.**—COTTAGES.—The Corporation of Cardiff invite tenders for the erection of 21 cottages at Eldon-street, Canton, and neighbourhood. Specifications of the Architect, Mr. E. J. Elford, M.Inst.C.E., City Engineer, City Hall, Cardiff.

JUNE 20.—**Derby.**—PAINTING.—The Derby Education Committee invite tenders for painting and colouring at various schools during the summer holidays. Specifications from Mr. Frank C. Smithard, Secretary, Education Office, Becket-street, Derby.

JUNE 20.—**London.**—PAINTING, &c.—The London County Council invite tenders for (1) Painting Work in Lodges and Buildings in Dulwich-park, and (2) for supply and erection of about 21 rods of 6 ft. cleft, close pale oak fencing, at Finsbury-park. Forms of tender of the Acting Chief Officer, Parks Department, Aldine House, Bedford-street, W.C. 2.

JUNE 20.—**Saddleworth.**—WALLS, &c.—The West Riding Highways Committee invite tenders for rebuilding spandril and parapet walls and constructing concrete saddle over arch at Wellihole Bridge, within the Urban District of Saddleworth. Specification of Mr. F. G. Carpenter, West Riding Surveyor, County Hall, Wakefield. Deposit £1.

JUNE 21.—**Elgin.**—STABLES.—Tenders are invited for the erection of stables in Cumming-street, for the Town Council. Specifications of the Borough Surveyor, Elgin.

JUNE 21.—**Steyning.**—CONCRETE SLUICE.—Tenders are invited for the construction of a concrete sluice into the River Adur, opposite the Beeding Cement Works. Specifications of Mr. A. J. Catt, Alston House, Southwick.

JUNE 21.—**Wigan.**—PAINTING.—The Education Committee invite tenders for painting, colouring, &c., at the various schools. Specifications at the Education Offices, King-street, Wigan.

JUNE 23. — **Birmingham.** — PAINTING. — The Guardians invite tenders for exterior and interior cleaning, colouring, and painting of certain buildings at the Children's Homes, Shenley Fields. Specifications of the Superintendent at the Homes.

JUNE 23.—**Glasgow.**—VARIOUS WORKS.—The Corporation invite offers for (1) reinforced concrete and sundry other work at Govan Power Station, Helen-street, Govan; (2) brick and reinforced concrete work at the sub-station, Ringford-street, Springburn; (3) demolition of buildings at Holm-street and Mains-street, Glasgow. Specifications of Mr. W. W. Lackie, Engineer, Electricity Department, 75, Waterloo-street, Glasgow.

JUNE 23.—**Halifax.**—PAINTING.—The Education Committee invites tenders for the painting of various schools. Specifications of Mr. S. Lord, Borough Engineer, Town Hall, Halifax.

JUNE 23.—**Ipswich.**—PAINTING.—The Education Committee invite tenders for the outside painting, and for the inside colouring, painting and varnishing, &c., of certain schools, etc., in the Borough. Specifications of the Committee's Surveyor, Mr. E. T. Johns, 8, Lower Brook-street, Ipswich.

JUNE 23.—**Leeds.**—PAINTING.—Tenders are invited by the Markets Committee for painting the exterior of Kirkgate Market and the roof of the New Market Hall, Leeds (covering an area of about four acres). Specification of Mr. W. T. Lancashire, City Engineer, Municipal Buildings, Leeds.

JUNE 23.—**Leeds.**—PAINTING.—The Leeds Education Committee invite tenders for the painting and cleaning of schools. Specifications at the Education Offices (Architect's Section), Calverley-street, Leeds.

JUNE 23.—**Manchester.**—PAINTING.—The Paving, Sewering, and Highways Committee invite tenders for painting various bridges in the city. Specifications at the City Engineer's Office, Town Hall, Manchester. Deposit £2 2s.

JUNE 23.—**Morley.**—PAINTING.—The T.C. invite tenders for painting the Alexander-hill Town Hall, Specification of Mr. F. Turner, Borough Engineer Town Hall, Morley.

JUNE 23.—**Rochford.**—REPAIRS, PAINTING, &c.—The Guardians of Rochford Union invite tenders for (1) repairs to porter's lodge; (2) painting, &c., of nurses' home, water tower, and outside of porter's lodge, &c. Specifications of the Master at the Workhouse, Rochford.

JUNE 23.—**Wolverhampton.**—HOUSES.—The Housing Committee invites tenders from contractors for the erection of forty-eight houses in Green-lane area. Applications to Mr. George Green, M.I.C.E., Town Hall, Wolverhampton. Deposit £2 2s.

JUNE 24.—The North-Eastern Railway invite tenders for erection of general stores, forge, machine shop, smith's shop, &c. Quantities supplied on personal application to Mr. Arthur Pollard, the Company's architect at York.

JUNE 24.—**Brentford.**—ALTERATIONS.—The Brentford Board of Guardians invite tenders for alterations at the administrative block at Warkworth House, Twickenham-road, Isleworth. Specification of Mr. F. E. Harmsworth, Clerk to the Guardians, Union Offices, Isleworth, Middlesex.

JUNE 24.—**Shoreham-by-Sea.**—VARIOUS WORKS.—The Steyning Guardians invite tenders for carrying out the following work at their Workhouse, Shoreham-by-Sea:—(a) Extension of engine room and engineer's workshop, (b) erection of coal cellars at the cottages, (c) painting work, internal and external, at the Nurses' Home and two Infirmary Blocks. Specification of Mr. Arthur Flowers, Clerk to the Guardians, Union Offices, Shoreham-by-Sea.

JUNE 24.—**Warrington.**—PAINTING.—The Guardians of the Warrington Union invite tenders for painting the exterior ironwork and woodwork at their Cottage Homes, Padgate. Specification of Mr. Arthur Bottomley, Clerk, Bewsey-chambers, Warrington.

JUNE 24.—**Worksop.**—PAINTING.—The Worksop Guardians invite tenders for painting the Kilton-hill Infirmary, Worksop, both inside and out. Quantities of Mr. A. H. Richardson, Architect, Market-place, Worksop.

*JUNE 25.—**London.**—The Imperial War Graves Commission invite tenders for contract H.S. 3, 403 headstones, for Le Trepot Cemetery, to be of natural stone with hand-carved regimental badges and lettered inscriptions.

JUNE 25.—**Glasgow.**—BUILDER'S WORK.—The Corporation invites offers for the following works required in connection with the proposed extensions to Knightswood Hospital, viz.:—(1) Excavation concrete and brick works; (2) slater work and rough-casting; (3) lath and plaster works; (4) plumber work; (5) painter work; (6) glazier work; and (7) tile work. Specifications at the Office of Public Works, 64, Cochrane Street, Glasgow.

JUNE 25.—**Morriston.**—ALTERATIONS.—Tenders are invited for alterations to Calfaria Baptist Chapel. Quantities at Glanffrwd House, Morriston.

JUNE 25.—**Orsett, Essex.**—The Orsett R.D.C. invite tenders for the erection of seven pairs of cottages in the parish of West Thurrock. Particulars and forms of tender may be obtained at the Council offices, 2, Orsett-road, Grays.

*JUNE 25.—**Shoreditch** The Guardians of the Parish of Saint Leonard, Shoreditch, invite tender for painting the interior of the Nurses' Home, at the Infirmary, 204, Hoxton-street, N.

JUNE 25.—**Westminster.**—PAINTING, &c.—The Westminster Guardians invite tenders for painting and repairs and the erection of sanitary annexes at the Infirmary. Specification of Mr. W. J. Lickley, Clerk Guardian's Offices, Prince's Row, Buckingham Palace road, S.W.

JUNE 26.—**Belper.**—PAINTING.—Tenders are invited, for painting at Belper Joint Hospital. Specification of the Clerk, Bridge-street. Belper.

JUNE 26.—**Cannock.**—HOUSING.—The U.D.C. invites tenders for the erection of 16 semi-detached houses. Quantities of Mr. R. Blanchard, Surveyor, Council Offices, Cannock. Deposit £2 2s.

JUNE 26.—**Whitehaven.**—HOUSES.—The T.C. invite tenders for the erection of sixty houses, and construction of roadways, &c. Specification of the architect, Mr. J. S. Stout, 36, Lowther-street, Whitehaven. Deposit £5 5s.

JUNE 30.—**Greenwich.**—The London County Council invite tenders for cleansing, repainting, regulating, &c., Greenwich Footway Tunnel. Specifications, bills of quantities, forms of tender, &c., may be obtained from the Chief Engineer, County Hall, Spring Gardens, S.W., 1, upon payment of £1, returnable only on receipt of a bona-fide tender.

JUNE 30.—**Grimsby.**—BUILDING.—The Corporation invite tenders for the erection of buildings in connection with the extension of engine house, boiler house, &c., of the electricity works. Quantities from Lieut.-Colone W. A. Vignoles, Borough Electrical Engineer, Corporation Electrical Works, Grimsby. Deposit £1 1s.

JULY 1.—**Chelsea.**—The Guardians of the Poor of Chelsea invite tenders for painting and repairs to the exterior of Workhouse, the Guardians' Offices, Infirmary and Nurses' Home and Doctor's house. Full particulars from Edward J. Harrison, Esq., Architect, 23, Berkeley-road, Crouch End, N. 8, accompanied by a deposit of £2, which will be returned on receipt of a *bona fide* tender.

JULY 2. — **Hammersmith.** — The Hammersmith Borough Council invite tenders for the execution of cleaning, painting, &c., required at the Electricity Department, 85, Fulham Palace-road, Hammersmith. Forms of tender and specifications may be obtained on application to the Borough Engineer and Surveyor at the Town Hall.

JULY 2.—**London.**—The Commissioners of His Majesty's Works are prepared to receive tenders for the completion of the Charterhouse Telephone Exchange.

*JULY 2.—**Wandsworth, S.E.**—The Guardians of the Wandsworth Union invite tenders for painting work, &c.: (*a*) at the St. James' Infirmary; (*b*) at the Swaffield Institution, Wandsworth, S.W. 18.

JULY 5.—**Brixham.**—HOUSES.—The Brixham Urban District Council invite tenders for the erection of sixteen houses in connection with the Council's housing scheme, at Garlic Rea. Quantities of the Surveyor, Town Hall, Brixham. Deposit £1 1s.

JULY 5.—**Rosslynlee.**—PAINTING.—The Midlothian and Peebles District Board of Control invite tenders for painting the woodwork, windows, projecting roofs, &c., at Rosslynlee Asylum. Specifications of the Clerk and Treasurer, 19, Heriot-row, Edinburgh.

JULY 7.—**Radcliffe.**—The Radcliffe U.D.C. invite tenders for the erection of 24 workmen's dwellings. Particulars and quantities may be obtainedon payment of a deposit of £2 2s., which will be returned on receipt of bona fide tender, from Mr. S. Mills, Clerk, Council Offices, Radcliffe, Manchester.

*JULY 8.—**Ashford, Middlesex.**—The Manager of the West London District School, Ashford, Middlesex, invites tenders for the erection of a swimming bath transforming existing swimming baths into spray baths and fixing new steam main.

JULY 14.—**Llanelly.**—HOUSES.—The Corporation of Llanelly invites tenders for the erection of forty-four houses, at Capel, Llanelly. Quantities at the Borough, Surveyor's Office, Town Hall, Llanelly. Deposit. £10 10s.

NO DATE.—**Hamilton.**—HOUSES.—Tenders are invited by the Burgh of Hamilton for various works in connection with housing scheme. Names to Mr. P. M. Kirkpatrick, Town Clerk, The Town House, Hamilton.

NO DATE.—**Liverpool.**—REPAIRS.—Tenders are invited for renovations to the Railwaymen's Convalescent Homes, Leasowe Castle. Names to Mr. T. W. Haigh, Architect, 2, Exchange-street, E., Liverpool Deposit £2 2s.

NO DATE.—**Saddleworth.**—HOUSES.—The Saddleworth Urban District Council invites applications from contractors willing to tender for the builder's and joiner's work in connection with the erection of 16 houses in Greenfield, to be built of brick and 20 houses in Uppermill to be built of stone. Particulars of Mr. E. Rowbotham, Clerk, Council Offices, Uppermill, near Oldham.

NO DATE.—**Yeovil.**—HOUSES.—The R.D.C. invite tenders for the erection of six houses at Barwick and ten at Martock. Names to Messrs. Petter & Warren, Architects, Yeovil.

NO DATE.—**Bradford.**—ADDITIONS.—Tenders are invited for additions to Branch Stores, Carr-street, Manchester-road, for the Great Horton Industrial Society, Ltd. Quantities of Messrs. John Drake & Son, architects, Queensbury, near Bradford.

NO DATE.—**Pontefract.**—HOUSING.—Contractors desirous of tendering (whole or in separate trades) for the erection of 124 workmen's dwellings are invited to apply to the Architects, Messrs. Garside & Pennington Ropergate, Pontefract. Deposit £2 2s.

NO DATE.—**Scarborough.**—PAINTING.—Tenders are invited for painting forthwith the whole of the outside of the Clarence Gardens Hotel, North Side, Scarborough. Particulars of Mr. W. S. Robinson, Huntriss-row, Scarborough.

NO DATE.—**Seaton Burn.**—PAINTING.—Tenders are invited for painting and cleaning the Seaton Burn and District Working Men's Social Club. Specifications of the Secretary, The Club, Seaton Burn.

FURNITURE, MATERIALS, etc.

JUNE 24.—**London.**—RAILWAY MATERIAL.—The Great Indian Peninsula Railway Co. invite tenders for the supply of fittings for points and crossings, and for wheels and axles. Fee £1. Specifications of Mr. R. H. Walpole, Secretary, 48, Copthall-avenue, E.C. Fees, 10s. and £1 respectively.

JUNE 24.—**Rhondda.**—RAW MATERIALS.—The Rhondda Urban District Council invite tenders for granite, limestone and tar macadam. Specification of Mr. E. Hazledine Barber, Surveyor, Council Offices, Pentre, Rhondda.

JUNE 25.—**London.**—MATERIALS.—The Metropolitan Water Board invites tenders for materials for periods of three or six months. Forms of tender of the Chief Engineer, 2, South Place, Finsbury, E.C. 2.

JUNE 27.—**London.**—RAILWAY MATERIAL.—The Bombay, Baroda, and Central India Railway Company invite tenders for fittings for C.I. pot sleepers. Specification of Mr. S. G. S. Young, Secretary, 110, Bishopsgate, London, E.C. Fee £1 1s.

JUNE 30.—**Southampton.**—GRANITE.—The T.C. invites tenders for twelve months' supply of broken granite. Specifications of the Borough Engineer, Southampton.

NO DATE.—**Trimdon.**—MATERIALS.—The Trimdon Coal Co., Ltd., Deaf Hill Colliery, invite tenders for the supply of timber, oils, iron nails, &c., for six months. Forms of tender of Mr. J. E. Barker, Deaf Hill Colliery, Trimdon Station, S.O.

ENGINEERING, IRON AND STEEL.

JUNE 28.—**Birkenhead.**—TELEPHONE INSTALLATION.—The Guardians invite tenders for the supply and installation of internal telephones at their institutions. Specification of Mr. S. R. Carter, Clerk to the Guardians, Poor-Law Offices, Conway-street, Birkenhead. Deposit £2 2s.

JUNE 28.—**Shoreham-by-Sea.**—BRIDGE.—The West Sussex County Council invites tenders for the reconstruction of Nrofolk Bridge over the River Adur. Quantities of Mr. H. Howard Humphreys, 28, Victoria-street, Westminster, S.W. Deposit £10 10s.

JUNE 30.—**Bury St. Edmunds.**—BRIDGE.—The West Suffolk County Council invite tenders for the reconstruction of the existing bridge, as follows: Contract No. 1—Construction of concrete foundations, brick abutments, retaining walls and cutwaters. Contract No. 2—Construction of reinforced concrete and parapets. Quantities of Mr. W. Lionel Jenkins, County Surveyor, Shire Hall, Bury St. Edmund's. Deposit £2 2s.

JULY 1.—**Dundee.**—STEELWORK.—The Commissioners of His Majesty's Works, &c., invite tenders for the steelwork required for Dundee H.P.O. Extension. Specifications, &c., at H.M. Office of Works, Parliament-square, Edinburgh. Deposit £1 1s.

*JULY 7.—**Coventry.**—The Gas Committee of the Corporation of Coventry invite tenders for re-covering roofs with asbestos-cement tiles, approximately 400 squares, including supplying new and respacing existing steel angle purlins at the Gas Works, Foleshill.

JULY 7.—**Dumfries.**—BRIDGE.—The Thornhill District Committee of the County of Dumfries invite tenders for the construction of a widening of the existing masonry bridge of three spans, carrying the New Cumnock and Kirkconnel highway over the River Nith. Quantities of the Engineers, Messrs. Couch & Hogg, C.E., 14, Blythswood-square, Glasgow.

JULY 31.—**London.**—WATER PIPES.—Tenders are invited in connection with the Jharia water supply scheme, for the supply of water pipes (cast iron, steel or reinforced concrete) up to 21 in. internal diameter, together with sluice stop valves, &c. The total length of pipes of all sizes will be about 102 miles. Messrs. Sir Alexander Binnie, Son & Deacon, 30, Buckingham-gate, Westminster, S.W. 1. Deposit £6.

AUGUST 28.—**Johannesburg.**—STEEL GATES.—The Rand Water Board invite tenders for the supply of 36 steel gates, 30 ft. wide and 25 ft. 4½ ins. high, for the Vaal River Barrage. Plans of the Chief Engineer Johannesburg. Deposit £5 5s.

ROAD, SANITARY, AND WATER WORKS.

JUNE 21.—**Cheltenham.**—CLEARING OUT LAKE.—The Corporation invites tenders for cleaning out a portion of the lake in Pittville Annexe. Particulars from the Borough Engineer, Municipal Offices, Cheltenham.

JUNE 23.—**Kensington.**—The Royal Borough of Kensington Council invite tenders for the construction of a number of manholes and a side entrance, together with incidental means of ventilation on certain dead ends of sewers, in the borough. Drawings and specifications may be inspected and further particulars obtained at the Acting Borough Engineer's Dept., Town Hall, Kensington.

JUNE 23.—**Lepton.**—ROADS.—The Lepton Urban District Council invites tenders for the reconstruction of a portion of Wakefield-road, Lepton, and also for tar macadam work at Dogley-lane, Lepton. Specification of Messrs. Berry & Sons, Surveyors, 3, Market-place, Huddersfield.

JUNE 23.—**Letchworth.**—ROADS, &C.—The Letchworth U.D.C. invites tenders for the construction of roads and sewers at Letchworth, Herts. Specifications at the Council Offices, 103, Broadway Chambers, Letchworth. Deposit, £2 2s.

JUNE 23.—**Poole.**—TRIAL BOREHOLES.—The Corporation invite tenders for the sinking of trial boreholes at the pumping station at Corfe Mullen. Specifications of Mr. A. P. I. Cotterell, Engineer, 17, Old Queen-street Westminster, S.W. Deposit £3 3s.

JUNE 23.—**Woodford.**—ROADS.—The U.D.C. invites tenders for wood paving works. Particulars of Mr. W. Farrington, surveyor, Council Offices, Woodford Green, Essex.

JUNE 24.—**Ealing.**—ROADS.—The T.C. invites tenders for the laying of sewers and construction of roads in connection with the housing scheme at Village Park. Quantities of the Borough Engineer Town Hall, Ealing. Deposit £2 2s.

JUNE 24. — **Loughborough.** — WATERWORKS. — The Water Committee of the Corporation invite tenders for the execution of works required in providing, carting, excavating for and laying about 2,380 yds. of 4 in. and 483 yds. of 3 in. cast-iron mains, &c. Quantities of the Engineer, Mr. A. H. Walker, A.M.I.C.E., Town Hall, Loughborough. Deposit, £1 1s.

JUNE 25.—**Llantrisant.**—SEWER, &C.—The Llantrisant and Llantwit Fardre Rural District Council invite tenders for the following works :—(1) Extension of sewer at Gilfach Garden Village ; (2) surface water drainage at Thomastown, Tonyrefail. Quantities of Mr. Thomas Saunders, Surveyor, School-street, Pontyclun. Deposit £1.

JUNE 28.—**Dudley.**—ROADS.—The T.C. invites tenders for the reconstruction of roads and streets in the borough. Specifications of the Borough Surveyor, Town Hall, Dudley. Deposit £1 1s.

JUNE 28.—**Wrexham.**—WATERWORKS.—The Wrexham and East Denbighshire Water Co. invite tenders for the excavation and setting-in of 4,500 lineal yards of 9 in. pipe trench. Particulars at the Company's Office, Egerton-street, Wrexham.

JUNE 28.—**York.**—ROADS.—The Housing Committee of the York Corporation invite tenders for the preliminary road works in connection with their housing scheme at Heworth, York. Quantities of Mr. F. W. Spurr, City Engineer, Guildhall, York. Deposit, £2 2s.

JULY 1.—**Bolton-upon-Dearne.**—ROADS, &C.—The Bolton-upon-Dearne Urban District Council invites tenders for carrying out the necessary road-making and construction of sewers in connection with the housing scheme on the Bolton and Goldthorpe sites. Quantities from the Architects, Messrs. Garside & Pennington, Ropergate, Pontefract.

JULY 1.—**Deptford.**—ROADS.—The Borough Council of Deptford invites tenders for making up and paving Troutbeck-road, and the unpaved portions of Arica-road and St. Norbert-road. Specification at the Borough Surveyor's Office, Town Hall, New Cross-road, S.E. 14.

JULY 11.—**Lymington.**—SEWERAGE WORKS.—The R.D.C. invites tenders for sewerage works. Specifications of Messrs. Shenton & Easdale, Engineers, 28, Victoria Street, S.W.

JULY 12.—**Batley.**—ROAD AND SEWER WORK.—The Corporation invites tenders for the laying out of a site of about 15 acres at Bradford-road, Batley. Quantities of Mr. Harold L. Hall, Borough Surveyor, Town Hall, Batley.

Auction Sales, Tenders, &c.

✱JUNE 23.—**Dagenham.**—The Disposal Board Ministry of Munitions, invite tenders for oil and water colour paint, laying at the National Cartridge and Box Repair Factory, Dagenham.

✱JUNE 24.—**Abbey Wood.**—Messrs. Herring, Son and Daw will sell, by order of the Disposal Board, boarded buildings now used as hostels. Catalogues and order to view may be obtained of the Auctioneers, 98, Cheapside, E.C. 2.

JUNE 24 AND 25.—**Byfleet.**—Owing to the completion of Government contracts, Messrs. W. G. Tarrant Stons & Co. have instructed Messrs. Bradshaw, Brown & Co. to dispose of the buildings and contents of the outside yards by public auction, timber buildings, timber wood-working machinery, twenty Tarrant's sleeping huts, electric motors, motor 'bus, &c., &c, Particulars from the Auctioneers. Billiter-square Buildings, E.C. 3.

JUNE 24 AND 25.—**Yatesbury.**—Messrs. Tilley, Parry & Culverwell will sell by direction of the Disposal Board, at Yatesbury Aerodrome, huts, portable offices, bricks, building material, carpenter's tools, &c.

JUNE 25 AND 26.—**Bircham Newton.**—Messrs. Stephen Gregory & Son will sell at Bircham Newton Aerodrome, timber, earthenware, pipes, corrugated iron, and a quantity of various useful builder's material, 35 h.p. horizontal oil engine, one Crompton generator, belt, &c.

JUNE 25 AND 26.—**London, N.**—Messrs. Weatherall & Green will sell by Order of the Disposal Board, at Pymmes Park, Edmonton, huts and building materials and numerous valuable building materials.

JUNE 26.—**London.**—Messrs. C. C. & T. Moore will include in their sale at Winchester House, Old Broad-street, E.C. 2., small freehold engineering works, and six houses adjoining, situated at Limehouse. Particulars of Auctioneers, 7, Leadenhall-street. E.C. 3.

✱JUNE 27.—**Willesden U.D.C.**—The Willesden U.D.C. invite tenders for the erection of a portable office at their wharf, 429, Harrow-road, Paddington.

✱JUNE 27 & 28.—**Hazlewood, Aldeburgh.**—Messrs. Robert Bond & Sons have received instructions from the Disposal Board to offer for sale, building material and plant, huts, timber, miscellaneous hardware at the Aerodrome, Hazlewood, near Aldeburgh. Catalogues on application to the Auctioneers, Old Bank House, Ipswich.

✱JULY 1.—**Surrey.**—By Order of the Board of Trade (Timber Controller's Department), Messrs. Joseph Hibbard & Sons will sell by public auction at Salford's Mill (close to Horley Station, L.B. & S.C. Railway), timber, comprising 1,500 to 2,000 standards silver spruce, Scotch fir and larch ; also large quantity of prime oak logs.

✱JULY 2.—**Paddington.**—The Paddington Board of Guardians invite tenders for external painting and other work at their offices, Harrow-road, W.

✱JULY 2.—**Guildford.**—Messrs. Crowe, Bates & Weekes will sell, by order of the Disposal Board, at Chilworth Gunpowder Factory, temporary buildings, two 5-compartment brick and weatherboard house, and numerous other buildings, machinery, plant, &c.

✱JULY 3 & 4, 9, 10 & 11.—**Buckminster, Grantham.**—Messrs. Walker, Walton & Hanson will sell, by order of the Disposal Board, sawn timber, galvanized tanks, cement, &c., huts, plumbing and ironmongery materials ; also bedsteads, mattresses and pillows, blankets, hurricane lamps and enamel-ware.

JULY 4.—**Essex.**—Tenders are invited for the demolition of all earthworks upon the London Defences in eight sections. The tenders will be for a lump sum for each of the eight contracts. Full particulars on application to the Staff Officer, London Defences, 2, Great George-street, Westminster, S.W. 1.

JULY 5.—**Essex.**—Messrs. Craske & Sons will sell at the Board Room, Corn Exchange, Colchester, by direction of Major Hutchinson, Aresford Hall, important agricultural holdings, including the Brook Farm, unless previously sold by private treaty. Particulars of Auctioneers, Colchester.

✱JULY 8 & 9. —**Cranwell, Lincolnshire.**—Messrs. Escritt & Barrell will sell, by order of the Disposal Board, at Cranwell Aerodrome, surplus contractors' plant and effects, huts, light railway material, 8 tons block bolts, nuts and washers, 11 tons twisted iron wall ties, 700 scaffold poles, 1,000 putlogs, 6 contractor's or farm carts, corrugated iron sheeting and rough wood.

JULY 10.—For sale, "Roxeth," Harrow-on-the-Hill. Particulars from Messrs. May & Rowden, Auctioneers, 27, Maddox-street, W. 1.

✱JULY 14.—**Dorking.**—Messrs. Crow will sell (unless previously disposed of, privately), at the Red Lion Hotel, Dorking, the freehold, "Holmwood," Brick and Tile Works, and well situate building land in seven lots.

JULY 17.—**London.**—Messrs. Hawkins & Sons are instructed by Yelverton, Dawbarn Bros., Ltd., to sell by tender the freehold factory, steam saw joinery and moulding mills, with nearly three acres of land, up to date machinery, &c. Tenders on prescribed form to be delivered at Surveyor's offices by June 17. Full detailed particulars may be obtained from Messrs, Yelverton, Dawbarn Bros., Ltd., ; of Messrs. Taylor Simpson & Mosley, solicitors, Derby ; or of Messrs Hawkins & Sons, surveyors, 11A, Hart-street, W.C.1.

JULY 24.—**London.**—Messrs. Daniel Watney & Son will sell at Winchester House, Old Broad-street, valuable corner building site, suitable for the erection of shops, known as 105 and 106, Aldersgate-street.

NO DATE. — **Northampton-street,** N.1.—Messrs. McCormick & Son, Ltd., invite tenders for sale of 10,000 ft. unvarnished oak. For particulars apply Northampton-street, N. 1.

✱NO DATE.—Sale by tender by order of the Disposal Board, Ministry of Munitions. Offers are invited for the whole parcel or individual lots, lying at the National Box Factory, Park Royal, Willesden ; various planed and unplaned timber.

✱NO DATE.—**Abbey Mills, London.**—Sale by tender by order of the Disposal Board, Ministry of Munitions, large quantity of various makes of stoves and fittings &c.

✱NO DATE.—**Lee-on-the-Solent.**—Messrs. Hall, Pain & Goldsmith will sell, by order of the Disposal Board large quantity of buildings, material and plant, iron, mongery and tools, miscellaneous materials and stoves, beds, pillows and blankets.

Public Appointments.

JUNE 20.—**Worthing.**—The Borough Council of Worthing invite applications for the appointment of temporary architectural assistant in the Borough Surveyor's Department in connection with the Council's Housing Scheme. Salary, £5 per week. Applications in own hand-writing, and not more than three testimonials, endorsed "Temporary Architectural Assistant," to Mr. J. Kennedy Allerton, Town Clerk, Worthing.

JUNE 21.—**Hereford.**—The Hereford Rural District Council are desirous of engaging the services of an expert to undertake the preparation and carrying out of a housing scheme for the Rural District. Application to Jno. Moore, Clerk to the Council, 8, St. John-street, Hereford.

JUNE 21.—**Swansea.**—The Council of the Borough of Swansea invite applications for the following temporary appointments: Assistant Quantity Surveyor ; salary £275 per annum. Junior Assistant ; salary, £120. Four Architectural Assistants ; salaries, £250, £220, £180 and £150 according to experience. Applications, stating age, &c., together with three recent testimonials, endorsed "Housing Assistants," to Mr. H. Lang Coath, Town Clerk, Guildhall, Swansea

✱JUNE 23.—**London.**—The L.C.C. have vacancies for the following positions : L.C.C. School of building—visiting teacher of plumber's work : teacher to lecture on constructional iron work. L.C.C. Camberwell School of Arts and Crafts—visiting teachers of plaster work, life drawing, lithographic drawing, machine work (typography).

JUNE 24.—**Singapore.**—The Municipal Commissioners of Singapore require two architectural assistants between 25 and 32 years of age. Salary 3,600 dollars for the first, 3,870 for the second, and 4,140 for the third year, with a duty allowance of 720 dollars per annum. Applications with full particulars, Messrs. C. C. Lindsay & Pierce, M.M.Inst.C.E., 180, Hope street, Glasgow.

JUNE 25.—**Taunton.**—The Taunton Borough Council invite applications from architects for the appointment of architectural assistant, acting under the Borough Engineer and Surveyor. Applications, with full particulars, to Mr. D. Edwards, A.M.I.C.E., Municipal Buildings, Taunton.

✱JUNE 26.—**Norfolk.**—The Norfolk C.C. require practical man in the building department of the Small Holdings and Allotments Committee. Applications, stating age, experience, salary required, &c., and enclosing copies of three recent testimonials, should be sent to County Land Agent, Shire House, Norwich.

✱JUNE 27.—**Rochford.**—The Council of the County Borough of Rochdale invite applications for two architectural assistants. Salaries £300 per annum each. One architectural assistant, salary £275. Two surveying assistants, salaries £4 10s. and £4 4s. respectively.

✱JUNE 28.—**London.**—The London County Council invite applications for the appointment of director of housing, at a salary fixed of £2,000 a year. Applications to Clerk of the L.C.C., Spring-gardens, S.W. 1

✱JUNE 28.—**London.**—The London County Council invite applications for the appointment of architect to the Council and superintending architect of Metropolitan buildings, at a salary of £2,000 a year. Applications on official form, to the Clerk of the London County Council, Spring-gardens, S.W. 1

JUNE 28.—**Wembley.**—The Wembley U.D.C. invite applications for the position of assistant for Housing Scheme. Applications, giving full particulars, to Mr. E. R. Royle, Clerk to the U.D.C., Council Offices Wembley, Middlesex.

JUNE 30.—**Liverpool.**—The City of Liverpool Baths Committee invite application for the appointment of engineer and chief superintendent of baths and washhouses at a salary of £500 per annum and War Bonus. Builder—Contracts, &c.

✱JUNE 30.—**Aylesbury.**—The Bucks County Council invite applications for the appointment of architect and clerk of the works for the purpose of the small Holdings and Allotments Act.

✱JUNE 30.—**Stoke-on-Trent.**—The Stoke-on-Trent Borough Council invite applications for a competent architectural assistant to work primarily in connection with the housing scheme. Salary £150 per annum plus War Bonus in accordance with the scale in force for the time being.

✱JULY 1.—**Wandsworth.**—The Wandsworth B.C. invite applications for the appointment of sanitary inspector for the No. 2 District (Southfields Ward) Salary, £150 per annum, rising by £10 annualy to a maximum of £220 per annum, with uniform and war grant, at present 21s. per week.

NO DATE.—**Birmingham.**—The City of Birmingham Housing and Town Planning Committee invite applications for the following appointments :—Architectural assistants, salaries £275. Surveying assistants, salaries £182 to £208 per annum (including bonus).

✱NO DATE.—**Federated Malay States.**—The Public Works Dept.—Required by the Government, for three years' service, architectural draughtsman. Salary £300 per annum, plus duty allowance of £60 per annum and war bonus of £90 per annum.

✱NO DATE.—**Hong Kong.**—Overseer required by the Government of Hong Kong for the Public Works Department for a period of three years ; possible permanency. Salary £240, rising to £270.

Competitions.

JULY 14.—**Penzance.**—DESIGNS FOR WAR MEMORIAL.—£25 is offered for selected design. Cost not to exceed £2,000. Panels required for 200 names. Designs, with estimated cost, to be submitted under a *nom de plume* to C. E. Venning, 58, Morrab-road, Penzance.

✱SEPTEMBER 30.—**Bridlington.**—The War Memorial Committee invite designs for a War Memorial to be erected at cost not exceeding £2,500. A professional assessor has been appointed to advise the Committee. Premiums £100 and £50. Particulars, up to July 26, from the Secretary, Selection Committee, 79, Quay-road, Bridlington. Designs to be delivered by September 30, 1919.

PROPOSED NEW BUILDINGS AND OTHER WORKS.*

IN these lists care is taken to ensure the accuracy of the information given, but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works, at the time of publication, have been actually commenced. Abbreviations:—T.C. for Town Council; U.D.C. for Urban District Council; R.D.C. for Rural District Council; E.C. for Education Committee; L.G.B. for Local Government Board; B.G. for Board of Guardians; L.C.C. for London County Council; B.C. for Borough Council; and P.C. for Parish Council.

ADWICK-LE-STREET.—At a meeting of the U.D.C. plans for 350 houses on sites at Skellow and Woodlands were approved. The estimated cost is about £200,000. The houses are to be limited to eight to the acre.

BLAYDON.—The U.D.C., at its last meeting, passed plans for the erection of a picture hall at Rowlands Hill. The Housing Committee recommended the Council to make arrangements for proceeding with the scheme for erecting additional houses on the Council's land at Chopwell, and this was agreed to.

BOLTON.—Plans passed:—Garage, Ivy Bank-road, for Mr. Norman Jones; mixing room, Breightmel Bleach Works, for Messrs. D. Constantine & Sons; garage, Carlton Hall, for Mr. A. Nuttall; offices, &c., Weston-street, for Messrs. Ainsworth Bros. & Co.; two houses, Croft-street, for Mr. J. Hodgson; garage, 90, Chorley New-road, for Mr. G. Greenough; petrol store, Blackbank-street, for Victoria Garage Co.; garage, 63, Bradford-street, for Mr. R. Roberts; store extension to works, Back-street Mills, for Messrs. W. A. Holt, Ltd.; conversion of cottages, 16, Halliwell-road, for Mr. R. Waterhouse; rebuilding premises, Silver-well-lane, for Messrs. Vose & Sons; alterations, Bridge-man-place, for Messrs. Edward Hayes, Ltd.

BO'NESS.—Following a visit from Mr. Macniven, the L.G.B. architectural inspector, the local authority has approved an extensive site on which to build a first instalment of the 350 houses estimated by the burgh surveyor as necessary to meet the requirements of the burgh; and the local architects, Messrs. Thomson, Steele & Taylor, have been instructed to prepare the lay-out and type plans. The site chosen is situated at Dean-road and Erngath, overlooking the Firth of Forth, and there is a prospect of building operations being started within the next two months.

BRAINTREE.—Plans passed by U.D.C.: For the erection of 17 houses on the estate of the Crittall Manufacturing Co.

BRIDGE OF ALLAN.—The T.C. have decided to build a block of houses of twelve tenements, with four and five apartments, on the site at the old gasworks at Iverallan.

BRUMBY.—The Redbourn Hill Iron and Steel Co., Ltd., have bought the whole of the remaining part of the Cottage Beck building estate at Brumby, where the roads, sewers, gas and water mains are already in, and there is now nothing to prevent the firm from commencing house building. A start is expected to be made within the next fortnight.

BURNHAM (ESSEX).—The U.D.C. is applying to the L.G.B. for sanction to borrow £850 to purchase land on which to erect 32 houses.

CHESTERFIELD.—The Justices have approved of plans presented by Mr. J. R. Wigfull, architect, Sheffield, on behalf of Messrs. William Stones, Ltd., Sheffield, for the rebuilding of the Red Lion Inn, Brampton.

CONSETT.—Two housing schemes have been finally adopted by the U.D.C. The first is to erect 119 houses on 13 acres of land in No. 1 Field, 10 houses to the acre, with a public recreation ground, and 18 houses are to be built in Stanley-street, for the Council's employees and firemen. The schemes will be submitted at once for the approval of the L.G.B.

DORCHESTER.—Plans passed:—Implement shed, Mr. Pickett, for the Edison Steam Rolling Co.

EASTBOURNE.—The E.C. has decided to purchase Eversley Court for £9,250 for the purposes of a boys' secondary school, an expenditure of a further £5,000 being approved for the alteration of the premises.

GALASHIELS.—The T.C. have adopted plans for a memorial to Galashiels men who have fallen in the war. The memorial is embodied in plans which have been prepared by Sir Robert Lorimer for an extension of the municipal buildings at an estimated cost of £16,000.

GILLINGHAM.—Plans passed by T.C.:—House, Shakespeare-road, for Mr. Sandy; conversion of 2 and 4, Lock-street, into schoolroom, Mr. Winnicott, for the Trustees of the Wesleyan Church.

LIVERPOOL.—Apart from the municipal provision of dwelling-houses, a big boom in building may be expected in Liverpool pretty soon. Projects are in contemplation, which will have the effect of greatly improving the architecture and extending the manufacturing business of the city. The programme includes the rebuilding of several large business premises, the erection or extension of factories, and provision of an additional number of picture houses. The great growth of motoring is evidenced by numerous plans for the provision of garages to be attached to private residences.

LONDON.—It is stated that in the immediate future Messrs. Dickins & Jones will rebuild their Regent-street premises. Messrs. Marshall & Snelgrove have a scheme in hand for rebuilding their premises in Oxford-street, and Messrs. Debenhams are said to contemplate an extension to their premises in Wigmore-street.

MANCHESTER.—The T.C. has agreed to seek the sanction of the L.G.B. for the following loans, which total £1,735,756: £1,042,000 for the establishment of a new electricity generating station at Barton; £595,000 for the provision of gas manufacturing and distributing plant, to be met from revenue; £12,611 to purchase land at Newton Heath for housing: £74,145 in connection with the Anson Estate housing scheme; and £12,000 for proposed sewage works at Didsbury.

MIDDLESBROUGH.—As a first instalment of their housing scheme the Corporation have accepted the tender of a Blackpool firm to build 106 houses at a cost of £804 per house, exclusive of land, drains, &c., which will average about another £100 per house.

MONTROSE.—At a conference in Edinburgh with the L.G.B. a draft lay-out plan submitted by the Montrose T.C. Housing Committee was approved. In the plan provision is made for three blocks of houses on Rossie Island, some of three rooms of the "flatted" type, and the rest of the cottage type of four and five rooms respectively—40 houses in all.

NANTWICH.—The R.D.C. proposes to erect 260 cottages at once and afterwards to build 120 more.

ORSETT.—Several sites for cottages have been secured by the R.D.C.

PAISLEY.—The Dean of Guild Court has passed the following plans: The Paisley La Scala, Ltd., to take down existing properties at 10 & 11, High-street and to erect a picture house; the Abercorn Bowling Club, to make additions to their bowling house; Messrs. Fleming & Ferguson, to erect a boiler shop at their works; and Messrs. Walter M'Gee & Sons, to make additions to their works at Laigh-park. The picture house will provide seating accommodation for 1,300 persons.

PETERBOROUGH.—Messrs. T. Broadbent & Co., of Huddersfield, are enquiring of the T.C. as to a possible factory site.

PENISTONE.—At the last meeting of the U.D.C. plans were presented showing the lay-out of part of the estate at Cubley, which has been purchased by Messrs. Cammell, Laird & Co., Ltd., as a site for their Garden City. This lay-out is only for 100 houses, the first instalment of the 800 which it is proposed to erect. The average width of the ancient road known for generations as Mortimer's-road is 20 ft. 6 in. to 22 ft., and the firm intend to widen the road for 900 ft. to a width of 31 ft. The height of the ground level of the highest house is 915 ft. above sea level.

PLYMOUTH.—Plans passed: New shop front for Messrs. Alford & Co.; mangle factory, Prince Rock, for Messrs. Brendon & Dawe; premises, Pennycross-lane, and additions, Peverell, for the Plymouth Co-operative Society; new room, 78, Durnford-street, for Dr. T. W. Leet; alterations, 14, Marn-street, for Mr. F. E. Taylor; extension of garage, Salisbury-road, for Mr. W. Mumford; alterations and additions, Theatre-de-luxe, Union-street, for Mesdames Lowe & Boultwood; winding room, Empire Picture Theatre, for Messrs. King & Parry.

PORTSLADE.—The U.D.C. intends erecting 100 houses.

RICHMOND.—At a public meeting, it was unanimously agreed that the war memorial for the borough should take the form of a public hall. The committee which made the recommendation estimated that a hall capable of seating about 1,000 people, with suitable ante-rooms and shops underneath, would cost from £8,000 to £10,000, exclusive of the cost of the site.

SLOUGH.—At the request of the L.G.B. the Eton R.D.C. has decided to include a further 400 houses in its scheme for the accommodation of the workpeople to be employed at the Cippenham depot.

SHEFFIELD.—The City Architect has been requested to prepare plans for a laundry at Primrose Meadows.

SOUTH SHIELDS.—The L.G.B. have approved of the proposals of the T.C. in regard to the laying out part of the Cleadon Park Estate for the erection of workmen's dwellings, and steps are to be taken at the earliest possible opportunity to provide 1,000 houses, in accordance with the scheme of the Housing and Town Planning Committee.

STOURPORT.—The U.D.C. has adopted a housing scheme for the district, which will involve an expenditure of £50,000. About five acres of land, forming part of the Moor Hall Estate—which the L.G.B. inspector declares to be an ideal site, overlooking the Valley of the Severn—have been secured. It was stated at the last meeting that some of the houses will cost £900 to erect. The plans and details are to be at once sent to the L.G.B. for their approval.

STRANRAER.—At the last meeting of the T.C., the Housing Sub-Committee submitted lay-out ground plans on sites on Sheuchan Estate, which provide for the erection of 64 houses, in addition to the 54 houses in the east end of the town—the erection of which has already been approved. The plans and terms were approved, and it was agreed to submit them to the L.G.B. for approval.

STRETFORD.—Plans passed: Addition to 10, Warwick-road, for Mr. James Quick; motor house, "The Sycamores," Seymour-grove, for Dr. H. B. Woodcock; garage, Ogden-street, for Messrs. Sutcliffe & Bingham, Ltd.; roof over yard, Northumberland-road, for Messrs. Brookes & Sons; alterations to Trafford Hotel, for Messrs. Walker & Homfrays, Ltd.; alterations to bakery, Elsinore-road, for Mr. E. J. Oldfield; conveniences, off Warwick-road North, for Messrs. W. T. Glover & Co., Ltd.; workshop, Trafford Park-road, for the Port of Manchester Warehouses, Ltd.; office and boiler house extension, Westinghouse-road, for Rubber Regenerating Co., Ltd.; offices, work-shop, &c., Praed-road, Trafford Park, for the Fire Protection and Engineering Co., Ltd.; extension to works, Elsinore-road, for Messrs. Norbury Natzio & Co., Ltd.; chimney, Westinghouse-road, for the Southern Cotton Oil Co. (of G.B.), Ltd.; high-pressure gas annexe, Longford-road, for the Stretford Gas Co.; warehouse and canteen, Trafford Park, for the British Westinghouse Co., Ltd.

TAUNTON.—The T.C. has acquired the option of purchasing five acres of land at Priory for housing purposes.

TILBURY.—On the recommendation of the Works and General Purposes Committee, the Surveyor (Mr. S. A. Hill-Willis), has been instructed to prepare a report on the question of the construction of concrete cottages, giving details of different kinds of construction and the results obtained in those districts where such cottages had been provided, especially those in exposed and marshy areas.

WALSALL.—The Borough Surveyor has been requested to prepare plans for a new hospital for infectious diseases.

WOLVERHAMPTON.—Plans passed by T.C.:—Kelletts, Ltd., alterations to shop front, 11, Dudley-road; Hickman & Mould, repairs to stables and redraining premises, St. Mary's-street; A. J. Stevens & Co., transformer shed and switch room, Marston-road; T. Jackson, garage, Merridale-road; Mrs. Tandy, scullery, 7, Graiseley-street; F. J. Blakemore, bay window, Albert-road; G. H. Kidson, Ltd., temporary harness and corn store, Molineux-alley; Crane Foundry Co., sanitary accommodation, Crane Foundry; Charles Holmes, Ltd., tripe boiling works and cold rooms, Tower-street; A. Bladen, house, Compton-road; J. V. Boswell, garage and stabling, Newbridge-avenue; Wolverhampton Motor Services, garage, offices, showrooms, &c., Cleveland-road, and workshop, Powlett-street; Richards & Sons, workshop, St. James'-square; C. F. James, extension to motor garage, Sweetman-street; A. J. Stevens & Co., motor cycle cleaning shop, finishing and packing department, and repair shops and offices, &c., Graiseley Hill; T. Clarkson, two-story warehouse, Walker's Yard, Snow Hill; Monmore Green Rolling Mills, rolling mill roof, Cable-street.

WORKSOP.—The Housing Committee has decided to build 200 houses on a site near the Manton Colliery of the Wigan Coal and Iron Co., and to engage an architect to arrange for the laying-out of the scheme.

YEADON.—The U.D.C. has decided to erect 150 houses. They have purchased two sites, one of which has already been approved by the L.G.B., and approval to the other site is expected at a not very distant date.

FIRES

CROSBY-ON-EDEN.—A fire has occurred at Parkbrown on the farm tenanted by Mr. Horace Oram. A large portion of the farm buildings were destroyed.

KENSINGTON.—A warehouse in Warwick-road, belonging to Messrs. Bishop & Sons, furniture removers, has been destroyed by fire.

KINGSTON-ON-THAMES.—Damage done by a fire which broke out at the Kingston Empire has been estimated at £3,000 or £4,000.

NORTH PETHERTON.—Ashfield House, owned by Lord Portman, has been destroyed by fire.

ROTHERHITHE.—The firewood factory of Messrs. J. J. Knights, in Rotherhithe Old-road, has been greatly damaged by fire.

SHEFFIELD.—Considerable damage has been done by fire to the premises of Messrs. F. Mountford & Sons, machine knife manufacturers, Mary-street.

PATENTS.

APPLICATIONS PUBLISHED.*

121,731.—O. V. Cardell: Sheet metal radiators for heating buildings.

123,067.—J. B. Een: Casting of reinforced concrete vessels.

125,486.—A. Tilstone and T. Tilstone: Fuel-economizer or heat-regulator for ovens and kilns for firing pottery.

125,488.—W. Ross: Centrifugal pumps.

125,489.—H. B. Watson and T. C. Billetop: Centrifugal pumps.

125,492.—S. G. Kelsey: Waterproof compound or preparation for roofing and other purposes.

125,508.—A Taylor: Pumps.

125,512.—A. E. Challenor: Clamping device for tightening or locking the joints of jointed articles and for other purposes.

125,537.—D. M. Gray, W. Sharp and B. B. Donald: Hand tools for fixing coverings to steel and iron members of various structures.

125,557.—A. E. Alexander (Grand Rapids Show Case Co.): Combination furniture and knock-down shelving units.

125,558.—M. Deacon: Transporter rafts for carrying timber or other freight.

125,648.—F. C. Nestler and F. C. Nestler, Ltd.: Aeroplane hangars and like sheds.

125,726.—C. J. Nichols: Knock-down box or packing case.

125,779.—R. L. Rogerson: Domestic fireplaces.

125,787.—J. T. South: Interlocking bricks.

125,835.—W. J. Woosey: Devices for preventing down-draught in chimneys or the like uptakes.

125,840.—C. A. Jones and E. Jones: Folding step-ladders.

* See also our List of Competitions, Contracts, etc.

* All these Applications are now in the stage in which opposition to the grant of Patents upon them may be made.

PRICES CURRENT OF MATERIALS *

[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry. Since our last issue various prices have been revised.—Ed.]

BRICKS, &c.

Per 1,000 Alongside, in River Thames up to London Bridge.

	£ s. d.
Best Stocks	3 16 6

Per 1000, Delivered at London Goods Stations.

	£ s. d.		£ s. d.
Flettons	2 9 6	Best Blue Pressed Staffordshire	8 2 6
Best Stourbridge Fire bricks	9 5 0	Do. Bullnose	8 17 9
		Blue Wire Cuts	7 2 0
GLAZED BRICKS—			
Best White, Ivory, and Salt Glazed Stretchers	21 10 0	D'ble Str'tch'rs	28 10 0
		D'ble Headers	25 10 0
Headers	21 0 0	One Side and two Ends	29 10 0
Quoins, Bullnose and 4½in. Flats	26 10 0	Two Sides and one End	30 10 0
		Splays and Squints	23 0 0

Second Quality, £1 per 1.000 less than best. Cream and buff, £2 extra over white. Other colours, Hard Glaze, £5 10s.extra over white.

	s. d.	
Thames Ballast	15 6	per yard, delivered
Pit Sand	18 6	
Thames Sand	20 0	2 miles
Best Washed Sand	19 0	radius
½in. Shingle for Ferro-Concrete	18 0	Paddington.
¼ in.	19 0	

Per ton. delivered in London area.

	£ s. d.	£ s d
Best Portland Cement	3 10 6	3 13 6

63/6 alongside at Vauxhall in 80-ton lots.

Ferrocrete per ton extra on above	5 0
Best Ground Blue Lias Lime	2 5 0 at rly. depot.

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks. The sacks are charged at 2s. 6d. each and credited at 2s. each if returned in good condition within three months.

Grey Stone Lime ..... 55s. 0d. per ton delivered.
Stourbridge Fireclay in s'cks 37s. 6d. per ton at rly. dpt.

STONE.

	s. d.
BATH STONE—delivered in railway trucks at Westbourne Park, Paddington, G.W.R., or South Lambeth, G.W.R., per ft. cube	2 0
Do. do. delivered in railway trucks at Nine Elms, L. & S.W.R., per ft. cube	2 1½
Do. do. delivered on road waggons at Nine Elms Depot	2 2½
PORTLAND STONE—	
Brown Whitbed, in random blocks of 20 ft. average, delivered in railway trucks at Nine Elms, L.& S.W.R., South Lambeth Station, G.W.R., and Mileage Station G.W.R., per ft. cube	2 10½
Do. do. delivered on road waggons at above stations, per ft. cube	2 11½
White basebed, 2d. per ft. cube extra.	

NOTE.—½d. ft. cube extra for every foot over 20 ft. average.

RANDOM BLOCKS—Per Ft. Cube, delivered at Rly. Dpot.

	s. d.		s. d.
Ancaster in blocks	3 2	Closeburn Red Freestone	3 4
Beer in blocks	1 11	Red & White Mansfield random block	5 2
Grinshill in blocks	2 9	Yellow Magnesian Limestone do. do	4 2
Darley Dale in blocks	3 2		

YORK STONE, BLUE—*Robin Hood Quality.*

Delivered at any Goods Station London.

	s. d.
Scappled random blocks	Per Ft. Cube 7 0
6 in. sawn two sides landings to sizes (under 30 ft. super.)	Per Ft. Super 5 6
6 in. rubbed two sides, ditto	„ 6 2
3 in. sawn two sides slabs (random sizes)	„ 2 5
2 in. to 2½ in. sawn one side slabs (random sizes)	„ 1 5½
1½ in. to 2 in. ditto, ditto	„ 1 3

HARD YORK—

Delivered at any Goods Station London.

Scappled random blocks	Per Ft. Cube 6 0
6 in. sawn two sides landing to sizes (under 40ft. super.)	Per Ft. Super 5 0
6 in. rubbed two sides ditto	„ 6 0
4 in. sawn two sides slabs (random sizes)	„ 2 10½
3 in. ditto, ditto	„ 2 2
2 in. self-faced random flags	Per Yard Super 6 10

WOOD.

(The following prices are the Controller's prices fixed Feb. 7, 1919. The control is now removed.)

Pursuant to paragraph 3 of the Timber Control Order, 1918, the Controller of Timber Supplies hereby gives notice that until further notice the following shall be the maximum prices at which imported timber may be sold. These prices are per standard landed and in store.

WHITE SEA REDWOOD.

Inches	1st £ s.	2nd £ s.	3rd and unsorted £ s.	4th £ s.
4 × 11	54 10	52 10	49 10	47 10
4 × 9	50 10	48 10	45 10	43 10
4 × 8	47 10	45 10	42 10	40 10
4 × 7	47 10	45 10	42 10	40 10
3 × 8	46 10	44 10	41 10	39 10
3 × 7	46 0	44 0	41 0	39 0
3 × 6	45 10	43 10	40 10	38 10
3 × 5	45 10	43 10	39 10	37 10
2½ to 3 × 11	53 10	51 10	48 10	46 10
2½ to 3 × 9	48 0	46 0	43 0	41 0
2½ × 7 to 8	46 0	44 0	41 0	39 0
2½ × 6	45 10	43 10	40 10	38 10
2½ × 5	45 10	43 10	39 10	37 10
2 × 11	53 10	51 10	48 10	46 10
2 × 9	48 0	46 0	43 0	41 0
2 × 8	46 10	44 10	41 10	39 10
2 × 7	46 0	44 0	41 0	39 0
2 × 6	45 10	43 10	40 10	38 10
2 × 5	44 10	42 10	39 10	37 10
2 × 4	44 10	42 10	40 0	38 0

UNSORTED LARCHWOOD at 3rd Archangel Redwood Prices.

Boards, 1st and 2nd, £1 10s. extra.
Boards, 3rd and 4th, £1 extra.

WOOD (*Continued*).

FEATHER EDGED BOARDS, £40 10s. per std.
SAWN LATHS, 3s. per bundle.
U/S SLATING BATTENS (yellow and white and stripe), £35.
SWEDISH AND NORWEGIAN FLOORING AND MATCHING.
U/S Red and White.

Per 100ft. super.	Per 100 ft. super
1¼in. P.E. at 60/-	¾in. P.E. at 30/-
1¼in. P.E. at 50/-	¾in. P.E. at 25/6
1in. P.E. at 40/-	½in. P.E. at 20/6
¾in. P.E. at 35/-	

T. & G. and Match Lining at 6d. per square extra.

PLANED BOARDS—11 in., £45 per standard; 10 in., £43 per standard; 9 in., £43 per standard; 8 in., £41 per standard.

YELLOW PINE.

Inches	1st £ s.	2nd £ s.	3rd £ s.	4th £ s.
3 × 12 and up	67 0	55 0	50 10	44 0
3 × 11	64 0	53 0	48 16	44 0
3 × 10	58 0	48 0	44 0	42 0
3 × 9	57 0	47 0	43 0	41 0
3 × 8	55 0	45 0	42 0	39 0
3 × 7	55 0	45 0	42 0	39 0
3 × 6 and down	52 0	42 0	40 0	37 0

For complete specification and controlled prices, see "London Gazette," February 7, 1919.

Dry Wainscot Oak, per ft. super, as inch	0	2	6	to	0 3 0
¼ in. do. do.	0	2	0	to	0 2 6
Dry Mahogany—Honduras, Tabasco, African, per ft. super, as inch	0	2	6	to	0 3 0
Cuba. Mahogany	0	3	6	to	0 4 0
Teak (Rangoon, Moulmein or Java), per load	60	0	0	to	85 0 0
American Whitewood planks, per ft. cube	0	18	0	to	1 0 0
Scotch Glue, per cwt.	5	5	0	..	—
Liquid Glue, per gallon	0	17	0	..	—

SLATES.

1st quality slates from Bangor or Portmadoc in truck load delivered London area. Per 1,000 of 1,200.

		£ s. d.
Best Blue Bangor Slates,	24 by 12	48 10 0
„ „ „	22 by 12	35 0 0
First quality „	22 by 11	32 5 0
„ „	20 by 12	32 0 0
Best Blue Portmadoc	20 by 10	27 10 0
„ „	18 by 10	22 0 0
First quality „	18 by 9	18 0 0
„ „	16 by 10	17 0 0
„ „	16 by 8	13 5 0

TILES.

	Per 1,000 f.o.r. London. £ s. d.
Best machine-made tiles from Broseley or Staffordshire district	6 2 6
Ditto hand-made ditto	6 7 6
Ornamental ditto	6 10 0
Hip and valley tiles (per dozen)	0 14 9

METALS.

JOISTS, GIRDERS, ANGLES, C.I. COLUMNS, &c.
(*Prices controlled by Ministry of Munitions.*)

WROUGHT-IRON TUBES AND FITTINGS—
(Discount off List for lot of not less than £4 net value delivered direct from works. 5 per cent. less carriage forward if sent from London stocks.)

	Sizes up to and including 2 in. Tubes.	Fittings.	Sizes 2½ in. to 6 in. Tubes.	Fittings.
Gas	21½	32½	26½	37½
Water	13½	28½	21½	35
Steam	6½	25	16½	32½
Galvanised Gas	2½	25	7½	30
„ Water +	7½	21½	Net.	27½
„ Steam +	17½	17½	+7½	25

L.C.C. COATED SOIL PIPES—London Prices ex works.

	Pipe. s. d.	Bends, stock angles. s. d.	Branches, stock angles s. d.
2 in. per yd. in 6 fts.	4 7	3 4	4 6
2½ in. „	5 6	3 8	5 0
3 in. „	6 9	4 0	6 0
3½ in. „	7 6	5 0	7 0
4 in. „	7 11	5 8	8 0

RAIN-WATER PIPES, &c.

	Pipe. s. d.	Bends, stock angles. s. d.	Branches, stock angles s. d.
2 in. per yd. in 6fts. plain	3 4	1 10	2 6
2½ in. „ „	3 9	2 2	3 0
3 in. „ „	4 5	2 8	4 0
3½ in. „ „	5 4	3 2	4 8
4 in. „ „	5 7½	3 10	5 8

L.C.C. DRAIN PIPES,—9 ft. lengths. London Prices. 4 in., 8s. 4d. .. 5 in.. 9s. 7d. .. 6 in., 11s. 9d.

	Per ton in London. £ s. d.		£ s. d.
IRON—			
Common Bars	24 0 0	to	25 0 0
Staffordshire Crown Bars good merchant quality	25 0 0	..	26 0 0
Staffordshire "Marked Bars"	26 0 0	..	27 0 0
Mild Steel Bars	22 10 0	..	23 10 0
Steel Bars, Ferro-Concrete quality, basis price	22 0 0	..	23 0 0
Hoop Iron, basis price	27 0 0	..	28 0 0
„ „ Galvanised	38 0 0	..	—
Sheet Iron Black—			
Ordinary sizes to 20 g.	25 0 0	..	25 10 0
„ „ 24 g.	26 0 0	..	26 10 0
„ „ 26 g.	27 0 0	..	28 0 0
Sheet iron, Galvanised flat, ordinary quality—			
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	34 0 0	.. —	Nominal prices.
Ordinary sizes to 22 g. and 24 g.	34 0 0	.. 34 10 0	Nominal prices.
Ordinary sizes to 26 g.	36 0 0	.. 36 10 0	Nominal prices.

METALS (*Continued*).

	Per ton in London. £ s. d.		£ s. d.
Sheet Iron, Galvanised, flat, best quality—			
Ordinary sizes to 20 g.	35 10 0	..	Nominal prices.
„ „ 22 g. and 24 g.	36 0 0	..	Nominal prices.
Ordinary sizes to 26 g.	39 0 0	..	Nominal prices.
Galvanised Corrugated Sheets—			
Ordinary sizes, 6 ft. to 8 ft. 20 g.	33 0 0	..	Nominal prices only.
Ordinary sizes, 22 g. and 24 g.	33 10 0	..	Nominal prices only.
Ordinary sizes, 26 g.	32 10 0	..	Nominal prices only.
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker	27 0 0	..	—
Best Soft Steel Sheets, 20 g. and 24 g.	27 5 0	..	—
Best Soft Steel Sheets, 26 g.	29 0 0	..	—
Cut Nails, 3 in. to 6 in.	31 0 0	..	32 0 0

(Under 3 in., usual trade extras.)

LEAD, &c.

Delivered in London.

	£ s. d.		£ s. d.
LEAD—Sheet, English, 4 lb. and up	35 0 0	..	—
Pipe in coils	35 10 0	..	—
Soil Pipe	38 10 0	..	—
Compo pipe	40 10 0	..	—

NOTE—Country delivery, 20s. per ton extra; lots under 5 cwt., 1s. 6d. per cwt. extra. Cut to sizes, 2s. cwt. extra.

Old lead, ex London area, at Mills per ton	21 10 0	..	—
Do., ex country, carriage forward per ton	22 10 0	..	—
COPPER—			
Strong Sheet per lb.	0 2 3	..	—
Thin „ „	0 2 4	..	—
Copper nails „	0 2 3	..	—
Copper wire „	0 2 4	..	—
TIN—English Ingots „	0 2 6	..	—
SOLDER—Plumbers' „	0 1 3	..	—
Tinmen's „	0 1 5	..	—
Blowpipe „	0 1 8	..	—

GLASS.

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES AND IN SQUARES IN ORDINARY SIZES.

	Per Ft.		Per Ft.
15 oz. fourths	7½d.	32 oz. fourths	10½d.
„ thirds	8d.	„ thirds	11½d.
21 „ fourths	8½d.	Fluted, Obscured and Enamelled Sheet,	
„ thirds	8½d.	15 oz.	7½d.
26 „ fourths	9½d.	21 „	8½d.
„ thirds	10½d.		

Extra price according to size and substance for squares cut from stock.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES. Per Ft.

¼ Rolled plate (unobtainable)	—
⅜ Rough rolled and rough cast plate	6d.
½ Rough rolled and rough cast plate	6½d.
Figured Rolled, Oxford Rolled, Baltic, Oceanic, Arctic, Stippolyte, and small and large Flemish white	6½d.
Ditto, tinted	7½d.
Rolled Sheet	6d.
White Rolled Cathedral	6d.
Tinted do.	6½d.

PAINTS, &c.

		£ s. d.
Raw Linseed Oil	in pipes per gallon	0 10 6½
„ „ „	in barrels „	0 10 9½
„ „ „	in drums „	0 11 2½
Boiled „ „	in barrels „	0 11 2
„ „ „	in drums „	0 11 8½
Turpentine	in barrels „	0 9 1
„	in drums (10 gall.) „	0 9 4
Genuine Ground English White Lead, per ton (In not less than 5 cwt. casks.)		64 5 0
GENUINE WHITE LEAD PAINT— "Blackfriars," "Nine Elms," "Park," and other best brands (in 14 lb. tins) not less than 5 cwt. lots	per ton delivered	91 16 0
Red Lead, Dry (packages extra)	per ton	47 10 0
Best Linseed Oil Putty	per cwt.	1 11 3
Filocol	per cwt.	0 16 6
Size. X D Quality	fkn.	0 6 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak	0 16 0
Pale Copal Oak	0 17 0
Superfine Pale Elastic Oak	0 19 6
Fine Extra Hard Church Oak	0 18 0
Superfine Hard-drying Oak, for seats of Churches	1 1 0
Superfine Pale Elastic Carriage	1 1 0
Fine Pale Maple	1 2 0
Finest Pale Durable Copal	1 5 0
Extra Pale French Oil	1 4 0
Eggshell Flatting	1 0 0
White Pale Enamel	1 6 0
Extra Pale Paper	0 16 0
Best Japan Gold Size	0 12 0
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 12 0
Brunswick Black	0 10 0
Berlin Black	0 16 0
Knotting	1 10 0
French and Brush Polish	1 0 0

* The information given on this page has been specially compiled for THE BUILDER and is copyright. Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 12 *noon on Wednesday*.

* Denotes *accepted*. † Denotes *provisionally accepted*.
‡ Denotes *recommended for acceptance*.

PLUMSTEAD.—For works of repair and painting externally and internally to the Infirmary and Laundry Buildings, High-street, Plumstead, for the Guardians of the Woolwich Union. Messrs. Whincop & Parnell, Architects, 42, William-street, Woolwich.

*R. Haslam, 46, Brookfield-road, Woolwich, S.E. £1,560
E. Proctor & Sons, 326, High-street, Plumstead £1,960

WEST HAM.—For cleansing, painting and repairing various schools, for the County Borough of West Ham. Mr. J. H. Jacques, 2, Fen-court, Fenchurch-street, E.C. 3:—

Balaam-street (exterior): Stoneley & Carroll, Stratford ..	£492	11	6
Canning Town (exterior): Chapman & Sturton, Victoria Docks	312	15	0
Credon-road (exterior): Barker & Co., Plaistow	480	0	0
Custom House (exterior): Barker & Co., Plaistow	368	0	0
Gainsborough-road (exterior): A. Webb, Stratford	420	0	0
Godwin-road (exterior): J. T. Luton & Son, Stratford ..	418	0	0
Hallsville (exterior): H. C. Horswill, Forest Gate	265	0	0
Hilda-road (exterior): A. Webb, Stratford	369	0	0
Upton Cross (exterior): H. C. Horswill, Forest Gate ..	295	0	0
Water-lane H.E. (exterior): E. Lovely, Stratford	185	0	0
Whitehall-place (exterior): E. Lovely, Stratford	425	0	0
Elmhurst-road (interior): Stoneley & Carroll, Stratford ..	626	0	0
New City-road (interior): H. C. Horswill, Forest Gate ..	967	0	0
Star-lane (interior): H. C. Horswill, Forest Gate	896	0	0
St. Andrew's (interior): Chapman & Sturton, Victoria Docks	265	0	0

WOLVERHAMPTON.—For re-surfacing Salop street, Cleveland-road, &c., for the Corporation:—

*Tarmac, Ltd. £5,876

WOLVERHAMPTON.—For supply of fixing of pen stocks, &c., at sewage outfall works for the Corporation:—

*Adams, Hydraulics, York £260

WOLVERHAMPTON.—For renewal of eastern light in West Park Conservatory for the Corporation:—

*Richards & Co., Darlington £398

WOLVERHAMPTON.—For paving part of Dudley-street with wood for the Corporation:—

*Improved Wood Paving Co., at 21s.3d. per sq. yard.

Trade with the Baltic.

A British Commercial Mission will shortly proceed to the Administrations of the Baltic Provinces of Esthonia, Latvia (Lettland), and Lithuania in order to promote the interests of British trade in these areas. The Commission will have a Commercial Member who will take samples, catalogues, &c. It is proposed to organise a sample room at the headquarters of the Mission for the benefit of prospective buyers and importers. Instructions for forwarding samples, &c., will be given on application to the Commercial Adviser of the Baltic Mission, Room 549, Palace Chambers, Bridge-street, Westminster, S.W. 1. 'Phone No. 9860 Victoria, Extension 79.—*Board of Trade Journal.*

Staff Outing.

Messrs. E. A. Roome & Co., the well-known building contractors, of Hackney, held their annual staff outing on June 14. The party, numbering well over 100, embarked at Richmond and journeyed up the river by special boat to Sunbury-on-Thames, where luncheon and tea were served. The chair was taken by the managing partner, Mr. F. J. Gayer, who expressed the hope that, with the settlement of the Peace Treaty, employers and employees would work together with a closer co-operation in order to develop still further that good feeling and mutual confidence which is so necessary to the proper working of the great industry of building. The afternoon was devoted to a programme of sports. After tea and on the return journey, a very successful concert was held on board.

The Central Building Trades Exchange.

The Central Building Trades Exchange, of 13-16, Tavistock Street, W.C., is the clearing labour exchange for the Metropolitan Police area, and deals with applications for men which are too large for the ordinary Labour Exchanges to deal with. The staff is divided into a clerical and a technical side, and all branches of the trade are looked after by experts.

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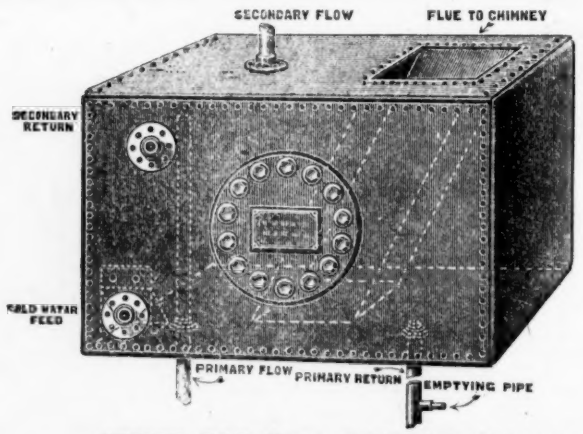

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